THE

NORTH BRITISH REVIEW.

EDINBURGH:
PRINTED BY T. CONSTABLE, PRINTER TO HER MAJESTY.

THE

NORTH BRITISH REVIEW.

VOL. XXVIII.

EDINBURGH:
W. P. KENNEDY, SOUTH ST. ANDREW STREET;
LONDON: HAMILTON, ADAMS, AND CO.;
DUBLIN: JAMES M'GLASHAN.

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THE
BRITISH REVIEW.

MAY, 1858.

Art. I.—1. *An Inquiry into the Credibility of Early Roman History.* By the Right Hon. G. Cornwall Lewis, Bart. 2 vols. 1855.

2. *The History of Ancient Rome.* By Niebuhr. Translated by Hare and Thirlwall. 3 vols.

3. *La Republique Romaine.* Par Louis de Beaufort. 2 vols. 1745.

The tide of favour seems fast subsiding from the "discoveries" of Niebuhr. It will be lucky if the reflux does not rush into reaction. This, in fact, would be an error of excess on the other side. Perhaps, however, in the order of nature generally, it is necessary for the due rectification of the crooked stick of imitation. The impetus acquired by the inert mass of Niebuhr's followers can alone be overcome by a proportionate excess of force. The evil, therefore, still would be, that this extreme of counter-movement should pass in turn for the truth, and mask the progress of the parent impulse; should be accepted as a doctrine, and not appreciated as a discipline. It is this progress towards the middle line of gravity and rectitude—a progress in effect, although a regress in direction, and which spontaneously takes place upon the one side and the other—that seems most urgent, and now mature, to be determined and directed.

It is gratifying to see this law of all investigation recognised by Niebuhr, however dangerous to his pretensions. "He who contends," says he, "against noted prejudices, digging to the bottom of them, and resolved to upset their dominion, cannot possibly keep entirely free from excess; he is led into it by the contemptible aspect which everything connected with the old error wears in his eyes. Moderation can only come in after the victory is achieved. Then is the time to look into the erroneous opinion, which had previously been current, for those features of truth which had been crusted over: and the restoring this truth to honour, when purified from what had made it worthless, is a delightful reward, to which an honest man will joyfully sacrifice his hypothesis."[1] This is right honestly and intelligently spoken. And we may hope that the less interested disputants about his doctrines respect too much their author's merits not to abide by his concession.

The real services of Niebuhr to Roman history are various. He has broken up the classic incrustation of routine: or, to speak strictly, not the classic, but the scholastic, the pedantic. He has directed a more intelligent attention to philology as an instrument of exploration in the primeval stage of history. He has effectually, in fine, evolved a large mass of views or elements which, if not strictly truth themselves, may become media of attaining it. He has, then, shattered an obstruction, supplied an implement, prepared materials; and done all these, in the most difficult and the most dignified of sciences. But to those benefits, all and each, there is undoubtedly a drawback.

The first, being executed naturally by the Thor's hammer of his country—by a shower of isolated blows, not by a systematic solvent—imposed its violence for vigour upon even the initiated, and imparted undue authority to results merely negative. The efficacy of philology has been made paramount, if not exclusive, and while the author had conceived it in little better than its verbal compass: he thus was working with a tool of which the nature was known imperfectly, and so far setting, as the adage has it, a blind guide to lead the blind. In fine, the instrument had been directed, not by method, but by intuition. The declared object of the author was, as he frequently expresses it, to *divine* the "internal history" of the Roman people in their infancy. So that, however Niebuhr might have succeeded for his own part, through the prerogative of that *μαντεία*, or sort of Greek "second sight," of which he does not hesitate to claim naïvely the gift,[2] still the value of his process could be scarcely more than personal; the new advance which he impelled must be arrested with his death; the troop of followers, when the dark lanthern of the leader was extinguished, would, by the instinct of such natures, rush all back to the old light. And on the third head, the acquired elements must be discredited by this retreat, and be depreciated in themselves, from misconception of their true character. For even discovery has but the value of mere desultory skirmishing, without the method which lays a basis for defending and extending it.

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[1] Vol. i., p. 385.

[2] Vol. iii., p. 318.

But Niebuhr was as loose himself in the conception of his researches, or, in the wonted phrase, his mission, as he has found and left the public. He felt, indeed, his province was particularly the *interior;* what he professes to disclose is the inside of Roman history. And in this point his mere instinct had informed him aright. But on descending into the cavern, the landscape naturally disappeared, and he forgot that the inside was not the *all* of his subject-matter. He did still worse, and set the inside to repudiate the outside, instead of seeing in this a co-part and the clew to the interior. Nay, in the third place, the guide he substitutes is not alone a mere hypothesis, but one that is moreover wrong, as resting on a false analogy. His work revolves on the assumption, that the unknown in Roman history may be concluded from the history of modern nations, his own particularly: overlooking the compound difference of race, epoch, civilization, and even the fact that modern history requires itself a test, a theory. Nor is this cluster of misconceptions at all peculiar to Niebuhr. It is assented to, nay urged, by even the latest of his adversaries, of whose work (which heads our epigraph) the avowed object is antagonistic. "For" (says he, speaking of his own principles) "if they be sound as to the early ages of Rome, they must be equally sound when applied to those of Greece."[1] This universal parallelism of nationalities and ages is still a universal fallacy in all historical philosophy; although, in particulars, its absurdity be often forced on even common writers.

For example, Colonel Mure, in his *History of Greek Literature*, has the following observations, which are quite particular to the question:—"The value of historical analysis as a means of critical illustration, must depend on a right estimate of the special circumstances by which the case supplying the parallel may *happen* to be distinguished. In the present instance, for example, no appeal could properly be made to the theological element of Teutonic fable in elucidation of the Greek heroic mythology, *unless on the understanding that the fundamental principles of the two systems of paganism were the same;* or, at least, that no such difference existed between them as to render illogical or improbable, in the one case, conclusions which might be probable or certain in the other. It *happens*, however, that in respect to the *peculiar* feature now in question, the Hellenic system of polytheism is marked by characteristics exclusively proper to itself, and which preclude, or rather *reverse*, the test of analogy, which it has been here proposed to derive from Teutonic romance."[2] Here the principle is recognised, though only as a rule of logic, and even urged in refutation of the same Teutonic test: and yet the writer, at the same time, mars the force of his own objection, by representing the fact it rests upon as but an accident—a thing of "happening"—a feature "peculiar" to a particular case. So faint and fragmentary is the notion, even where it gleams at all, of the pervasion of such national contrasts, not to say of their organic necessity!

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[1] Vol. ii., ch. 14.

[2] Vol. i., p. 26.

To throw some light upon this great order, both for its substantive importance and as a necessary preparation to judge the Niebuhrian controversy, it is requisite to task the reader with a few abstract but obvious principles.

It must be obvious that in every subject the exploration of the "interior" presupposes and depends upon a knowledge of the exterior. The latter aspect is exhibited spontaneously, and to the senses; the other is accessible but to the intellect, and by art. But as those courses of inquiry run adversely to each other—the exterior along the surface, the introverted athwart the body—the speculations are reciprocally thought to be repugnant. The extremes of oscillation are earlier noted in their contrariety, than they can be in their community of subject and impulsion. In the exterior, which precedes, there for the time is no suspicion that entire knowledge of each object is not offered by the outside; and the inquirer, even unconsciously, erects upon this basis a scheme of mere co-ordination, his fancy furnishing the causes. But when the structure straggles off, through the empirical additions, like our own feudal architecture, from all illusion of congruity; and when the intellect, become maturer by this exercise to desire unity, is led to seek it, as the next alternative, in the interior—the so-called essence, then the classics resolve to cling to the very moss of their hoary edifice, and the reformers uproot its basis among the rubbish of the general ruin. And yet the basis of bare fact must be the same in both inquiries. They but repose upon opposite sides of it, as the reflection and the object are observed to do, for instance, on the margin of a lake. But in this state they can be contemplated, the exterior but surface, and the interior but in section, with the distortion of foreshortening. These views, in all things, are harmonized but through the notion of solidity—a notion moulded by their long conflict, and itself opening a third procedure. These three phases of speculation may be rendered more familiar by denominating them Induction, Analysis, Synthesis.

Now, the second of these stages is the place of Niebuhr; and, we may add, it is the province of his nation also, and his whole race. For, as these logical operations have their executory organs in the three progressive ages of individual and of national life—the exterior view in infancy, the interior in adolescence, and the compound and intermediate view of full reality in the mind's maturity—so are they necessarily accumulated simultaneously or in space in the three classes—productive, active, and deliberative—of each community, and, in the expanse of an international community, by three races. What leaves no doubt of this necessity in the case of mind and of society is, that the processes are those which nature observes in animal formation also. She first begins, it is known, the embryo with an *exterior* membrane; she passes next to the *interior*, and outlines severally its various contents; it is only in the third stage, and on the basis of the previous results, that she proceeds to the supreme process of synthesis and development. Such, in short, is universally the order of nature; and the criterion of true method is to follow nature's footsteps. This is done by men collectively, and in proportion to the mass, they being in this state led by instinct or by habit. The guidance, at its minimum in the discretion of the individual, attains the maximum in a whole nation, and still more fully in a race.

Accordingly, in the great machinery that works our actual civilization, these three main organs are presented in due succession and opposition. The Roman nation, which was the earliest, and gave the basis of law and religion, is as distinctively inductive and exterior in even that religion. The induction explains the aggregated gods of its old Pantheon; the exterior, the idolatry imputed to its Christianity. For idol-worship is the merely sensile veneration of that moral nature, which those who feel it not within them must set in matter before the senses. The general character will be elucidated more conveniently in the sequel, as our business for the moment is with the second social organ. In fact, the nation that succeeded to and subverted the Roman power, is with like consonance addicted to the interior and analytic,—a race that speculates and acts from the impulsions of personality, from the suggestions of the subjective, not the impressions of the objective. These very terms and this distinction announce the vast Teutonic family, of which the analytic mission is so well testified by its history. It commenced duly with the barbarous analysis of force, in the invasion and destruction of the government of Rome; but it accepted the sensile religion, being then itself in the stage of sense. With the development, by civilization, of its own intellectual powers, it set to analyse, and overthrow in turn, the Roman religion, in quest of something analogical to the ideal within itself, but which this religion did not contain. This hypothetical interior, this spiritual significance, was thus pursued with the same instinct through the structure of the Church. Arriving later at an aspect of the ancient edifice, still more complex, the analytic race assailed the very history of the Roman people. Preluding here with the two Dutchmen, Cluverius and Perizonius, the movement reached its Luther in the German Niebuhr.

As the definition above advanced of the researches of this innovator was the point to be elucidated by the mission of his race, we need not follow the latter further into details moreover evident. It is this mission that sends the Germans into all the purlieus of antiquity, historical, philological, political, religious, and renders them the powerful quarriers for the new edifice of civilization. As to the organ of the third, the architectural function, which was to rectify the opposite excesses of its two fellows—which was to keep in view conjointly the interior and exterior, to put together by synthesis the materials which they prepared,—in a word, to organize or to *reform* in the proper sense, the later rise into predominance and the residual place in Europe, appear to point to the Celtic race.

But to return to Niebuhr, who is now wrested from a cloud, no doubt as gaudy, but also as misty, as used to hide the gods of Homer. He stands, in fact, unveiled in both his merits and defects, with the normality, and even necessity, of the concurrence of the two ingredients. We comprehend the singularity of his pursuits of the "interior;" the deep impulsion which he has given to the study of Roman history, which is the natural preparative for the philosophy of general history; the philological and subjective description of his main instrument, which is the usual Nominalism of his race, advanced to history. We can, moreover, now discern, amidst these positive advances, that the nature of the results is, notwithstanding, merely negative; can see the desultoriness of form, the dogmatism of the spirit, the utter chaos of the facts, the unreality of the hypothesis. And all this, as in the nature of the process of analysis.

In fact, this method moves by turns upon earth and imagination. It does not regulate the facts by one another, like induction: it despotizes them by an opinion or a sentiment of the explorer. It works, as Bacon has expressed it, *ex analogia hominis*. Hence it is of all the fittest for making dupes and reputations, as it presents at once a bait to both the mystics and the materialists. It might be likened, in effect as well as movement, to Virgil's Fame:—

Ingrediturque solo, et caput inter nubila condit.

* * * * *

Tam ficti pravique tenax, quam nuncia veri.

It is exactly, indeed, the herald, not the bearer, of the truth. From its progressive alternation between fiction and fact, proceeds, as premised, the reaction against the doctrines of Niebuhr. The oscillation takes place frequently within the German nation, which has its periodic swings between Jacobi and Fuerbach. But the more regular antagonist to German vision is the English mind.

It is accordingly this family function that is discharged towards Niebuhr, in set and systematic form, by the treatise of Sir C. Lewis.

The book is thus already characterized deductively. The author quite conformably proposes the rejection, not alone of the hypothesis and results of Niebuhr, but also of the section of Roman history which they concern. Not, however, as wholly false, but as unproveable, and therefore useless. He rejects equally the constitution which Niebuhr gave to ancient Rome, although exempted, in its quality of "internal," from his direct testimony. The rejection is, moreover, scarce consistent in a Whig. The German writer applied to Rome but the same ethnical hypothesis which, in the subject of society generally, inspired Locke with the "Social Compact." But Sir C. Lewis does not discern the weak side of this hypothesis. He seems, indeed, unconscious of all the principles above consorted, and does, in consequence, imperfect justice to Niebuhr, and to the subject. Nor are the principles which he proposes for his own guidance irreproachable. In prosecution of his object, which is thus as purely negative as the researches of Niebuhr, which he essays to overthrow, he will proceed, he says, in point of method, "from the known to the unknown," and will accept as valid testimony, but "contemporary witnesses." These are, doubtless, prepossessing guarantees to certain readers. But let us look a moment at the proposed application.

In the Aristotelian process, from the known to the unknown, what is it that can properly be meant by the former term? Assuredly, not complete knowledge, while kindred matters remain unknown; the connexion implied, forbids so trenchant a distinction. The "known," can therefore mean no more than the recognisance of sense, and the procedure would be said more justly to be from the sensible to the abstract. It is the march, above explained, from the exterior to the interior. But, thus defined, it is ill applicable to the scheme of Sir C. Lewis, who keeps his survey to "external evidences,"—meaning, doubtless, to bare facts. For facts can never make known other facts, or be themselves known, except through principles. The author, therefore, when he commences his inquiry with the age of Pompey—of which period he supposes that the history is fully known,—and proceeds backward by this clew, deludes the reader, and no doubt himself. The institutions, and thus the events, of any particular age or country, can be known, be understood, but through its antecedent history. It is the force of this necessity that draws, in spite of constant failure, the inquiries of the thoughtful into the infancy of nations. In point of form, then, the course of Niebuhr was less fallacious, in beginning, as he has it, in "the night of remote antiquity." Though in the dark, the guide he used was better known, being his own race; and he applied it in the order of simplicity and nature: the error lay in his supposing it in full analogy with the subject, whereas they largely were to each other as incommensurable quantities. But to eliminate the results, was the province of an English adversary; and hence the normal opposition of the method of Sir C. Lewis.

The like objection and allowance may be applied to his test of evidence. "The credibility," says he, "of early Roman history, as of every other history, depends upon its being traceable to the testimony of contemporary witnesses" (vol. i. p. 10). This common-law criterion is at all events characteristic. It is, moreover, quite at fault in even this technical rigidity. At *nisi prius* even, the decision does not depend alone on testimony; the merits are evolved but by the arguments of counsel and the effect, almost mechanical, of their reciprocal confliction. But this is more or less effected for ancient history by lapse of time. The throng of unessential circumstances, and incongruous opinions, that beset with their distractions the contemporary writer, and leave his narrative scarce the coherence of a sick man's dream, have dropt away; the dust is laid, the din is lulled, and we survey the field at leisure. The leading features of the action are presented in the results, and are eclectically stamped upon the memory of tradition. Imagination enters largely into the portraiture, no doubt. But what is all primordial history, and even the classic one of Greece and Rome, as this is daily hashed anew by the most sceptical, but a romance? Without philosophy, the only cement of historic narrative is fiction. Nor does this requisite at all invalidate the credibility of the facts; when understood, it is a costume that, on the contrary, characterizes them. It was the meaning of Aristotle, in deeming poetry more *true* than history. So absurd is it in Sir C. Lewis to call for witnesses to primitive history! But the real import of the perverse exigence is here again antagonism, the reaction of empiricism against illusory hypothesis.

Upon this puzzle of historians—the distinction of fact from legend—we may venture to condense the foregoing notice in a general formula. *The legendary element relates to causes or to consequences;* the effects, the facts themselves (allowance being made for higher colouring, reflected on them from either source), may be substantially relied on; and more especially if cause or consequence themselves of something known. Such is the rule which most antiquaries—among others, Mr Grote—pronounce, after long disquisition, to be completely "unassignable."[1] This historian is right, however, in rejecting Clinton's talk, which is scarce more indeed than a mechanical attempt to "split the difference."[1] And Sir C. Lewis, we see, will neither cut nor rip the Gordian Knot, but takes the course of throwing aside the whole compound in the lump. He gives, however, a description of the infant state of Roman history, which might seem fashioned to exemplify the explanation now submitted.

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[1] Hist. Greece, vol. ii. p. 50.

> "The characteristic peculiarity," says he, "of early Roman history is, that the marvellous, romantic, and poetical incidents are intermixed with dry, historical, and statistical accounts; that stories which bear all the appearance of fiction, which violate all the canons of internal probability, and which are quite consistent with the hypothesis of a poetical origin, are preceded, accompanied, and followed by narrations which have all the air of truth, which observe all the laws of historical probability, which present nothing picturesque or touching, or attractive to the imagination; and which, if we are to suppose them fictions, would seem to have been written by a Roman Defoe; by some ingenious author, who composed fiction with the deliberate purpose of making it pass for reality."—Vol. i., p. 228.

Notwithstanding these defects, in both his project and procedure, he has distinguished well the opposite defects of Niebuhr; and this discernment goes to confirm the polemic import assigned to his book.

> "The main cause," says he, "of the great multiplicity and wide divergence of opinions which characterize the recent researches into early Roman history, is the defective method which, not only Niebuhr and his followers, but most of his opponents have adopted. Instead of applying those tests of credibility which are consistently applied to modern history, they attempt to guide their judgments by the indications of internal evidence, and assume that the truth can be discovered by an *occult faculty of historical divination.* Hence, the task which they have undertaken, resembles an inquiry into the internal structure of the earth, or into the question whether the planets are inhabited. It is an attempt to solve a problem, *for the solution of which, no sufficient data exist.*"—Vol. i., p. 13.

Considered in the light of the preceding explanations, this single passage defines the position of both the author and his adversary.

In addition to the controversial or reactionary value, the book of Sir C. Lewis compiles the learning of the question. This seems gathered with much industry, if not with more assistance. But the collation and the criticism are not striking for force or freshness. To say the truth, the erudition is not only bookish, but blue-bookish. The impression which it leaves is cold, colourless, statistical. It speaks the writer a man of either mere facts or mathematics—walks of study wherein the counters disuse the faculty of reflection. There is not only no philosophy, in a systematic sense, but even the fragmentary use of any betrays the strangest inadvertences. A single instance will mark this character of an ambitious empiricism. Sir C. Lewis takes occasion to pronounce the *væ victis!*—that oldest Gallic *mot* on record—a "manifest absurdity." And why? Because it is not to be thought that this barbarian could speak Latin! The author, then, must be of opinion that the foreigners whose speeches are reported by Herodotus, Polybius, Livy, Tacitus, must have harangued, or been presented as haranguing, in Greek and Latin? No, surely; but the mind is apt to nod upon a patch-work, every piece of which demands a special effort of reflection. It may be added in excuse, that he appears to be, in this instance, in what we fear is rather an English humour with the Gauls. Constrained to recognise this race, as being in even its barbarism the only people that ever conquered, and always terrified the power of Rome, the philosophical and liberal author can only style them "strange savages." Ay, *strange*, indeed!

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[1] Fast. Hell., vol. i.

This allusion to the Gauls recalls the part above referred to, as played already by Celtic intellect in the discussion of Roman history. Its principal representative is Beaufort, an exiled Protestant, and who combined, in this capacity, perhaps, analysis with synthesis. Long anterior to Niebuhr, he analysed, in his Dissertations, the early history of Rome, with as much absoluteness as the German. Indeed the latter does little more than push his principles into the details, although he vouchsafes to the author but a single and a slighting mention. Beaufort, also, derived himself, no doubt, the notion from its due originators, the two Dutchmen already named, and in whose country he then resided. The strictly Celtic characteristic lay in not stopping with the analysis, but rather viewing it as a necessary preparation for synthesis. He, accordingly, next proceeded to recompose what he had destroyed, in his principal production, the "Roman Republic." His rules for reconstructing the dubious portion of Roman history are, first, says he, "Rejecting the doubtful facts, to adopt but those of which the proof is furnished by the sequel of the history; those events which *must necessarily have taken place*, and of which the succeeding events are in some sort the consequence. And, secondly, to take those test events but from what had been the practice in the best days of the Republic, and from its fundamental maxims."[1] It is the method, we perceive, adopted partly by Sir C. Lewis. The difference is, that his procedure is one-sided or backward only, while that of Beaufort moved alternately back and forth, from proofs to premises. Another difference no less essential is, that the Englishman looks for witnesses, while the Frenchman would have "consequences," and organical "necessities."

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[1] Dis. Rel., p. vi.

But from this formidable programme, the execution falls wide away. Indeed, the author never once makes any systematic use of it. The rules can have at most subserved the survey as private monitors, in his discursive exposition of the Roman usages and institutions. In this he fell back to the desultory and analytic form, which is afterwards resumed by Niebuhr, its natural organ. The treatment is indeed contrasted, in circumspection and rationality, with the rhapsodical and arbitrary dogmatism of the violent Teuton. But, after all, it was but stone-cutting, not edifying the building. Beaufort raised, then, but the porch, or rather only a propyleum, which stands an eloquent and honourable monument of prematurity.

There now remains that we unfold the strict necessity of all such failures, and sketch, if possible, the great prerequisites to this and similar undertakings.

"As rivers," observes Niebuhr, "flow into the sea, so does the history of all the nations around the Mediterranean terminate in that of Rome" (vol. i. p. 3). Not merely so, in truth, of all nations around the Mediterranean, but also around the globe, in the antecedent civilizations. The reason is the same,—the difference merely of degree. It is, consequently, from the tenor of such ulterior antecedents that we may gather the clew to history, at Rome or elsewhere, late or early. The law, or laws, of this procession cannot, however, be canvassed here. They have, besides, been above indicated, both in method and society, by the name of the productive, the destructive, and constructive forces. These were seen to be represented, in the actual epoch of civilization, by the Roman, the Teutonic, and the Celtic races respectively. Considered governmentally, they are familiar in general history by the appellatives of patriarchial, of warrior, and republican: That is to say, by governments of faith or filial veneration, governments of force or numerical volition, governments of intellect or social organization. Of course, these characters are not exclusive, they being accumulated, in each nation, race, or system of communities, as a condition of subsistence. It is but relative predominance that gives to everything its *character*. And this predominance of special character must be found more or less decided in proportion to the age,—that is, the stage of the whole progression.

With these precautions and explanations, the three principles are now submitted as the true key to all history, and the sole one to its infancy. It may be proper to exemplify, however slightly, the two former, as more immediately concerned in the question under notice. For the solution should show a positive criterion for Roman history, and at the same time, that the Teutonic one of Niebuhr must be preposterous.

The first position, therefore, is, that the known history of the Roman race implies the principle which, in the abstract sense of power, we name *paternal.* The national life will be abundantly submitted to the test, if we survey it in the institutions, usages, and literature.

The highest and earliest of the known institutions is the kingly office. But the Roman kings were "shepherds of the people," like Homer's monarchs. Niebuhr himself compares them to these heroic kings of Greece, with the difference of being a magistracy only for life. A difference, indicative of due progression in the second principle, of which the character is the intrusion of election upon inheritance. For, as the embryonic life of physical man is known to traverse all the forms which are permanent in the inferior species, so does the infancy of each nation repeat the previous steps of progress. The warrior principle, which, in Greece, had but *succeeded* the hereditary, came, in Rome, to be *confronted* to it, and thus corrective and co-operative. Hence the mixed or double character presented by the Roman kings, with a progressive inclination to the rising element of the *populus.* Hence the excellence of the famous constitution of Servius, which was a compromise of property or *paternity,* with *personality,* and at the juncture, when the two forces trembled still in transient equipoise. The Tarquins became decidedly the organs of the popular element; and hence their final expulsion, of which the fathers were the true authors. The very epithet, "Superbus," betrays patrician animosity; the multitude, with no pretension to the complacency of its kings, cannot experience the correlative resentment at their haughtiness. The by-name never once occurs amongst the thousand designations imposed upon European monarchs by the people in the middle ages. The current error, which views the fall of the Roman royalty as a popular movement, is unmasked also by the fanatical proscription of the very name; for this device has quite the stamp of priestly management of the multitude. If the aversion had been popular, the abolition would be complete; the name of king would be effaced from the entire official catalogue. But the hostility being patrician, it is found acting with more discernment, allowing the title to remain where it was for, not against, the fathers, as in the "*King* of the Sacrifices," and in the "inter-*rex,*"—both offices exclusive to the patricians, and elective; and offices, moreover, not honorary merely, as the former controlled the action of the comitia and thus the law-making, and the inter-rex had (like the kings) the appointment of the magistrates. The popularity of the kings is further notable in the circumstance, that statues of them lined the forum in its most democratic days; and with the Romans, the plastic image was little less than the original. That their respect for those prime magistrates was that of children for a father is attested, in fine, expressly by a curious passage of Cicero. He observes, in the *De Republica,* that the Romans viewed the kings, "not as masters or heroes, or even as kings, but as *guardians* of the country, as *fathers* and gods. That they regarded dignities, honours, and life itself, as conferred on them by the justice of the king." And the philosopher assures us, that "this sentiment of his countrymen would have remained unaltered to all posterity, if but the kings, on their part, had remained unchanged."[1] Cicero, who, though a plebeian, was a fautor of the patricians, received their pass-word, that the change was against the people, not against the fathers. But in truth the kings were prototypes of the tribunes of the people, their political or civic fathers, in opposition to the caste paternity.

As to these Conscript fathers and their institute, the Senate, they present the incarnation of the principle in question. It would be sufficiently proved by the predominance which this body really maintained to the last in the direction of the Republic. It was implied in the name of Senate, and the several senators were termed fathers. The functions even of the principal executive officials were paternal, in the sense of being despotical or absolute. The tribuneship, alluded to, began with even being a priesthood,[2] and continued to be sacrosanct as well as absolute within the city. The consuls occupied the same position towards the provinces and the patricians, and might exert it universally by a decree of the Senate. The dictatorial power was the paternal in its last extension. In fine, turning to the other and lowest extremity of the commonwealth—to the fundamental institutes of property and family—we find the ownership of the territory vested in the republic, by which was portioned out the use, as by a father to his children. So deeply engrained was this sentiment, that, on the adoption of new citizens, any property they might possess was to be first delivered up to, and then received in form back again from, the State. It is this primitive, or this paternal apprehension of society, that occasioned the agrarian agitation and legislation, which made so large and dark a figure in the polity of Rome, and which is still, like most of the rest, so insufficiently explained.

In the family, this principle of fatherhood is normal. It is only its peculiarities in the Roman that can be probatory. Such there are, in fact, and in a measure without example perhaps in history, not excepting those Roman prototypes, the Egyptians and the Chinese. The Roman father had not only an absolute power over, but an absolute property in, his family as well as slaves. Indeed, the power was more unlimited over the children, whom he was free to punish, sell, and kill, at his mere whim. And the distinction is remarkably confirmatory of the principle; for the father produced the children, but not the slaves. Nay, this fierce despotism might pursue, by right of blood, the hapless progeny into the third or the fourth generation. Not that the principle of paternity was stronger in the Romans than it had been, and is still, for example, in the Chinese; it is because it was grown weaker, as a result of the social progress,—because the spirit of emancipation was fermenting in the family,—because the children in the Roman families were stimulated to revolt by the example of the plebeians, those revolted children of the State. For the severities of legislation betray the pressure against which they strain. But the existence of this legislation to the latest moment of the republic, must be considered as demonstrative of the predominance of the spirit. In short, there scarcely was synecdoche in the language of Virgil:

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[1] Nec heros nec dominos appellabant eos quibus juste paruerunt, denique ne reges quidem; sed patriæ custodes, sed patres et deos. Vitam, honorem, decus sibi datum esse justitiâ regis existemabunt. Mansisset eadem voluntas in eorum posteris, si regum similitudo permansisset.—*De Rep.* L. I., xli.

[2] Niebuhr, vol. i., p. 331.

> Dum *domus* Ænea Capitoli immobile saxum
> Accolet, *imperiumque* PATER ROMANUS *habebit.*

This "Pater Romanus" was effectually the ruler; the nation but a mere conglomeration of "houses,"—the republic but a vast confederacy of family despotisms.

In the Manners, the general absence of abuse of this despotism, which is remarkable in Roman history, is a fact concurring to the same conclusion. It could prevail but where the power was still in season, and therefore salutary. This correlative condition of mental infancy is indeed manifest. It is conspicuous in the puerile and all-pervading superstitions that awed the Romans, no doubt patrician as well as plebeian, to the last. Their history is more miraculous than the divine one of the Jews. Their machinery of prodigies is of a nursery simplicity, and yet related with the same gravity as the sober facts by their historians. Indeed, so implicit is their credulity—this hereditary stage of intellect—that Polybius ascribed the greatness of the Romans to their superstition; but, with the subtlety of the Greek, and the subjectivity of foreign judgment, he thought the system a fabrication of the fathers to rule the people. He did not see that it was a growth of the popular mind itself; and, instead of being an external cause, was a co-effect with their general manners. But what we are particularly to advert to is, that the efforts of this infant reason are all found to turn duly, in its explanations of even history, upon the family relations.

Thus the city had a founder who was *suckled* by a wolf. It was populated promptly by the rape of the Sabine women. Its regal tyrants were got rid of through the ravishment of Lucretia. The decemvirs were overthrown through the father's sacrifice of Virginia. The city saved from the Volscians, through the wife and mother of Coriolanus. The Punic wars were an effect of the curse of Dido on the faithless Æneas. This fabled founder of the Roman State had left his native for the new home, with his father on his shoulders, his son beside him, and his wife behind. And the heroic attribute, by which a Roman so late as Virgil would most extol him, is filial *piety*—whence the epithet so enigmatic to the pedagogues. These are samples of the legendary history above defined, as well as proofs of the pervasion of the principle of paternity. This principle is even elevated to an axiom in the national manners, by that famous ultimatum of Roman reason, the *mos majorum*. The genius of the nation is limned by Ennius in a line:—"Moribus antiquis res stat Romana virisque." The hereditary manners correspond to the patricians; the great men, to the warrior element, which was conducted by those antique leading strings. The rude chronicler, with the advantage of the native sympathy and instinct, explains this better than the philosophical but foreign Polybius. Even Cicero can see no refuge for the tottering republic, but in returning to those ancient manners, and in praying the advent of a new Numa; one who should manage, says he, the commonwealth as a "good farmer" does his land.[1] The simile, like the expedient, characterizes the paternal spirit, in its lawgiving, agricultural, and traditional concomitants.

The same paternal and filial concert that presided in the politics, and that accumulated mythically in the usages of Rome, must, in the literature, also, present authority instead of argument; imitation, not originality; induction, not analysis. The resistance of the fathers to the popular culture, that saps their power, retards the rise in such a nation of any literature at all. And when at last, and despite those obstacles, a Roman literature did appear, it was a thing of imitation, and even thus, but a mere literature; that is, it was confined to poetry, oratory, and history—walks of mind wherein the language, the expression, is the chief ingredient. This, in fact, was not opposed to the authority of the fathers, which it defined without discussing, adorned without innovating. Even Cato, their rustic type, could accept language from the Greeks. As to the imitative character, it is notorious in Roman literature. The Romans themselves avowed it, proclaimed it even on the stage. A fact attesting their magnanimity, say the classical philosophers. A fact attesting, as we now perceive, but their stolid contempt for intellect. A London milliner or barber may own to imitating French fashions, with the addition, that such frippery is beneath the genius of an Englishman; but our purveyors of Paris farces will brave all penalties to mask their thefts. The reason is, that mental labour is more proud, because more prized, in even England, than it was in the most cultivated age of Rome.

The only native contribution of the Romans to their literature, was the facts; and those they did not, in the *mot* of Sheridan, invent. It would be, doubtless, to their credit, were it less their incapacity—that mental rudeness which took for "lying" the Greek fertility of intellect, and branded even the trader sharpness of the Carthaginians as studied perfidy. Those facts alone, in the condition of traditions, events, usages, are the materials of their poets, no less than orators and annalists. Virgil, who alone of them, as Niebuhr observes, has even attempted a construction, has merely taken it from Nævius (who himself chronicled the story from the popular tradition), and for the episodes and ornaments, drew on the Homeric epics. Ovid versified the ritual and theology of the nation. Lucan declaimed a gazette in rhapsodical hexameter. Lucretius did but translate the most materialist of Greek philosophers, and is, however, the highest effort of the nation in speculation. Cicero was a compiler, or rather, "crammer," not a philosopher. We dare assert that his whole writings do not contain a single thought that is not found in even our remnants of Greek philosophy and letters. Even in politics, the study and the practice of his life, when at the close he comes to treat them systematically in his Republic, he does not seem to have augmented, by the simulacrum of a view or principle, his stock from Aristotle, Plato, and the *mos majorum* of the constitution. Indeed, the circumstance is the most singular illustration of the national character,—a character of receptivity and transmission, not exploration. Accordingly, the real excellence of Cicero is style. The *curiosa felicitas* is the forte of the nation generally, as it is apt to be of individuals undistracted by native thinking. In Seneca, the trait degenerated to that dilettanteism, which drove Quinctilian to rebuke him as corrupting the language, and which would prove his Stoicism as factitious as his style.

The orators were equally devoid of invention. The shortest way to prove it is to note they were all lawyers: Cæsar was, perhaps, the only exception. "None of our people," says Cicero, "studies eloquence, unless for the business of the bar and the forum;"[1] whereas the Greeks, he adds, make this and most other modes of culture an object of pursuit for the intellectual enjoyment. The historians were naturally still more pragmatical.

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[1] Nemo enim studet eloquentiæ nostrorum hominum nisi ut in causis atque in foro eluceat.—*De Orat.*

Indeed, the Romans had hardly any in the Greek or modern sense. Their writers of this kind were, in effect, and even title, from Fabius to Tacitus, all *annalists*, not historians. And how should they do otherwise, in this as all the rest, than observe the *mos majorum* of the Pontifical Annals? The name of *history* and the notion were, like all art, brought in from Greece; the native term being the pragmatic and paraphrastic *res gesta*.[1] Sallust, who himself was at the head of this class, appears so conscious of his country's imperfection in the article, that he essays, sententiously as usual, an explanation. The Romans, says he, were too busy in *acting* history to write it. The American republicans make the same answer to a like taunt. And the bare fact is in both cases correct; but the inference runs counter to the aim of the apologists. If the Romans did in fact rather act than compose history, it was not as a matter of election, but of necessity. Nations must obey, still more than men, their leading faculties, and the complexion that fits for action disqualifies for writing. The two functions are as opposite as their muscular and nervous organs. A nation of empirical production and paternity, could not be possibly a nation of construction and philosophy. Accordingly, the highest or only of the essays of the Romans which reached historical *composition*, has degenerated into poetry. The florid style and strain of Livy was as poetical as Virgil's. He even rises, or rather relapses, into occasional hexameters; for metre is the swathing-bands or go-cart of infant history, as was exemplified at Rome itself in the two earliest of its chroniclers. It is the source of the famous fragments of the pretended ballad-poetry, which the divining gift of Niebuhr has detected in the style of Livy. It is the result of a tacit effort to link the narrative by sound, for want of logical analysis and ordination of the sense. It is this want that gives the other Roman annalists that abruptness which is in Sallust admired as energy, and as profundity in Tacitus!

This destitution of organizing power is a correlative of paternity, which dictates by authority, and does not dispose by reason. The Romans have accordingly never organized anything. The jurisprudence, their only systematic product, was a mere growth —an aggregation of experimental and precisely defined rules. Their vast empire was held together by no other tie than force, and therefore crumbled at the touch of the same wand that had created it. So little was there a conception of organical assimilation, that they left each conquered people not alone its religion, but laws and language. With the good fortune of other impotencies, this has passed for liberality. The Romans never could abstract government from the despotic and paternal power. With all their efforts and experience in controlling its abuses, they never fancied means less crude than the limitations of place and time. The dictator was universal despot, but for some months. The consuls, too, were despots, but for a year and outside the city. The despotism of the tribunes was confined by the city walls. The proconsul was a despot, but for few years and in his province. In fine, the pater Romanus was perpetual despot, but within his family. So imperceptible to the external or sensile vision of this nation was the vast tissue of relations that bind and balance the social system. The very army, which through their mental youth and inertness received such discipline, so far from having been a product of deliberate organization, took, on the contrary, its very name of *exercitus* from routine practice. In fine, this national characteristic is maximized by their poet Ovid, who sings—

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[1] The national contrast is engraven, as usual, in the terms. *Res gesta*, means, literally, *governmental administration;* while history (from ἱστορέω) means, to *inquire* or *explore*.

Solus et artificem qui facit, *usus* erit.

With due allowance for times and circumstances, it were easy to pursue the same aggregate of characters in the descendants of the Romans—a persistency implied by race as special organ of a social function. Indeed, the reader has all along, we trust, been making the application, and receiving new light upon the famous Italian politics. These, in fact, continue still but what they always have been—despotic. The various governments which the Italians have crumbled into, from their weak cohesion, are to this day the most oppressive as well as absolute of Europe. Their "free cities" of the middle ages were despotisms in rotation, alternations of factious butchery, proscription, and plunder; it was Marius and Sylla reproduced in a score of miniatures. They never had a written constitution, or even a legislature; and the office of the prime magistrate received its name from despotism. The very intellect or spirit—that sole essence of all freedom—has been embodied by the Italians in the most absolute of tyrannies; and, what is equally characteristic, they have given it the name of *father*, or rather *papa*, with the sort of childishness which they have stamped upon their whole language. Their public champions of liberty employ for arguments but daggers, just the same as in the days of Brutus, Cassius, Cataline, and the rest.

The manners, too, continue as *paternal* as the institutions. The Italians are divided into "houses," or tribes, no less effectually than were the Romans of the age of the elder Cato: they merely lack the public life to call their muster into the marketplace. Indeed, the family with the city remain still, as of old, the utmost sphere of the political vitality of the race. All beyond is but a void to them, which they denominate "Italian *unity*," without a dream of the organization which alone could henceforth realize it.

Nor is the literature an exception, as might be fancied, from current notions. It offers all the same defects and the same excellencies as the Roman. It is chiefly poetical, historical, oratorical; but the last in the guise of sermons—the pulpit being the modern rostrum. The poets are also, like the Roman, rather objective than lyric, rather narrative and descriptive than emotional and analytic. Even Dante, who will be owned the most ideal of the number, did but paint what to his age, if not himself, had been realities.[1] There is not, perhaps, throughout the poem a single incident of pure creation—one not furnished by tradition, or theology, or actual history. What is more striking, though the whole action appertains to the spiritual world, the poet never lets it quit the *terra firma* of the real. The Inferno is located towards the centre of the Earth; the Purgatory on a mountain in the Antipodic Ocean; the Paradise is placed in the planets and the sun. So impossible has it been, to this greatest genius of his race, to wean the intellect a moment from experience, earth, tradition! It is this positive, pictorial character that gives its power to the Divine Comedy; and thus an impotence of the intellect becomes the talent of the poet. For if it should be thought that scenery less physical was not conceivable, let the topography of the same regions be sought in Milton or in Klopstock.

The Italian historians also are, like the Roman, best in style. They remain as fully destitute of philosophy as their ancestors. The reflection of even Machiavel is but a fatherly sagacity—the result of a long and vigilant experience of the world. This distinction, which is quite national, confirms strikingly the assigned character. In fact, the race of "the exterior" must both observe and judge well. Thus, unpreoccupied with themselves, they perceive others with concentred keenness, and they judge them by the like objective comparison of induction. Whereas the Teuton, on the contrary, distracted by the interior, judges others, and even sees them, but with reference to himself; and therefore never can correct or generalise his social knowledge. He is accordingly in penetration, again, the opposite of the Italian. It is this outward perspicacity that explains also the appearance of an exception among the Italians to the Roman nullity in philosophy. It was consistent that the race of exercise and of empiricism should produce experimentalists and anatomists, in science. But such are not philosophers, and the Italians have no others. In the lapse of twenty centuries of leading culture and civilization, the race has never once produced an organizer or great logician. It is, once more, that its domain has been the physical, the exterior; whereas method involves also the interior, and combines both.

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[1] Hardouin, in his queer "Doubts," has one sensible remark, that the Divine Comedy is: Plutôt *une histoire en ruines des siècles passés.* Even Libri, a compatriot and eulogist, describes it: Une encyclope; *unedie recueil historique et scientifique.—Histoires des Mathematiques en Italie*, tom. ii., p. 165.

In fine, the worship, which is supposed to have been totally transformed, is in reality, as before intimated, as exterior as the Roman. In the priesthood of the latter, the candidates were to be faultless, like the victims which they sacrificed, in *physical exterior;* while no attention was bestowed upon the *moral* life or qualities, as witness the election of Publius Clodius, and still worse monsters. In the priesthood of Romanism, the first conditions are retained; but what the change may be in the second, at least in Italy, were a nice question. The Italians are saved by "works," which are the sacrifices of their forefathers; while the Teutons rely on "faith," which is the spiritual contrary. But this topic, however fertile in confirmation, must be foregone, lest we be thought inclined to mix sectarian sarcasm with pure science. A final illustration may be added in the phase of morals, which in the Italians should offer nothing of the interior source called conscience.

This consequence, accordingly, is verified by a phenomenon which is too famous and decisive to require detail or admit doubt. It is notorious that the principal didactic treatise in Italian literature, we mean the Prince of Machiavelli, is a hand-book of immorality. It erects tyranny into the first of the political virtues, in due conformity with what has always been the national notion as well as practice; it further prescribes a resort to all force and all fraud, alike to the end of maintaining and of subverting it. And all this profligacy was put forth not alone without apology, but almost without argument, as if a truism with his community. And, in fact, throughout all Italy, then the centre of Christianity, there was not raised a single voice in reprobation or objection. The first remonstrances were foreign, and came from England and France. Attention once directed to this aspect of the work, the enormity appeared so monstrous to the nations of the north and west, that the author was concluded to have meant a satire or a trap for tyranny. And this conceit seems to be still the ruling notion on the subject.

Lord Macaulay has, however, seized the fact itself aright. He has recognised the simple sincerity of Machiavel, and that the wiles and irony were commentators' phantasies. But when he would himself explain the manifest unconsciousness, in both a writer of the highest class and a nation of the highest culture, to the depravity, as he describes it, of the doctrines of the work, he falls forthwith, though more ingeniously, into the usual round of common-place. This may be defined, a taking of concomitants for causes—a fallacy still the staple of political philosophy. He rests the globe upon the elephant, and the elephant upon the tortoise, and, back again, the tortoise and the elephant upon the earth. Machiavel taught vice because he and his nation deemed it virtue; and the nation so regarded it because it was unwarlike, and chose to cheat instead of fighting its barbarous oppressors; and then it made this choice because it had been debased by Popery. But whence the Popery itself came, deponent doth not say.

The same family characteristics confounded this critic in their politics; and he escapes through that well-known "veil of light" of his illustration, which so often hides the sophistry, and sometimes even the sense.

> "In the political scheme of Machiavel," says he, "the means had been more deeply considered than the end. The great principle, that societies and laws exist only for the purpose of increasing the sum of private happiness, is not recognised with sufficient clearness. The good of the body, distinct from the good of the members, and sometimes hardly compatible with the good of the members, seems to be the object which he proposes to himself. Of all political fallacies, this has had the widest and most mischievous operation."—*Essay on Machiavel.*

Now, here the writer has again observed the facts with marked sagacity, but also tottered in exactly the same fashion in the explanation. The alleged fallacy of looking to the body, not the members—to the State, not the individuals—to the aggregate, not the elements, is no fallacy at all in a race of family; it is a philosophic truth and an intellectual necessity. Every father regards his family in this collective manner; and every object is long considered, by law or intellect, as the whole—that is to say, on the exterior, before penetrating to the parts. Accordingly, it has been no more "mischievous" than fallacious. It was the main-spring of the glory and the greatness of the Roman name. It is the celebrated *patriotism* which marked this people among all others, and which arose, as the name itself says, from viewing the nation as a family. The "great principle" of the critic is the contrary extreme of an exclusive individualism, introduced by the Teutonic race. This accordingly is, on the other side, considered mischievous and fallacious, by the race of aggregation, and with exactly the same reason. Both, in fact, are true or false, are beneficent or mischievous, according as applied, or not, to their natural places in the social march.

Macaulay was not however cited, it must be owned, for his authority, and as corroborative in proportion, by both his errors and concessions. We rather sought a useful pretext, in proceeding to sum up, whereby to bring him into court to receive judgment as an accomplice. It is known that he not only is a fautor of Niebuhr, but that he is so with a fervour which inspired the restoration of the very ballads on which floated down the lost history of ancient Rome. It was of use, then, to suggest the proper value of his suffrage, by showing how well he can interpret the Italians who live before him. In addition, his very failure was made to bear unconscious testimony to the truth of the criterion now submitted for the whole race.

The establishment of such a test,—which seems effected by this long exposition,—had been the positive and chief element in the proposal above made, to place this great historic question upon new and scientific ground. It would be hazardous to hope that a majority of readers will yet appreciate its full force and fertility to this end. If, however, after duly mastering its spirit and various phases, they would re-peruse the treatises of Niebuhr and of Lewis,—observing well the principles and applications of the former, and controlling them by the objections or authorities of the latter,—we engage they will see farther into the subject than either author. At all events, they will, we think, dissent from the position with which the late Chancellor of the Exchequer concludes his two volumes, and which he sets off in a metaphor that may adorn the style of office, but which ill savours of the spirit or the dignity of science. "The workers," says he, "in this historical tread-mill may continue to grind the air, but they will never produce any valuable result."—(Vol. ii., p. 556.) It is not doubted that even the writer, were he himself to try henceforward, would, with his knowledge of the facts, produce a result really valuable.

Complementary to the establishment of this new principle of exploration, we were further to prove the test of Niebuhr to be even preposterous. But the proposition is a corollary to certain laws already demonstrated. It results from the opposition of tendency and function pointed out between the methods of induction and analysis. For these were proved to be exactly typical, as well in action as speculation, of an universal contrast between the Roman and Teutonic characters. But Niebuhr is constantly assuming these identical; inferring analogically from the one to the other, from what he knows of the Teutons to what he does not know of the Romans. Than this there could be surely no procedure more preposterous. Nor is the fact at variance with the merits we allowed him: it is rather the absurdity that has enabled him to do his work. Without the illusion of similitude the test would never be applied, and by consequence the given object could be never analysed. For Roman history, for instance, is not analysable by its own principle, as a lever cannot move a weight in the direction of its own pressure. The proper action of that principle, as now evolved, is to synthetize, to reproduce in the mode of nature, which is the task of complete science. Niebuhr did but mistake, like most mankind, what he was doing, and thought himself reforming, when he was really but *un*forming. It is a case of the adage: Man proposes, and God disposes; or, as Bossuet expresses, "l'homme s'agite et Dieu le mene."

The contrariety between the races, their destinations and mental products, has, moreover, been exemplified repeatedly in point of fact. Our exposition of the Roman character was constantly suggesting it. An express indication was, except in leading features, withheld studiously, for fear of complicating an inquiry so large and new. The contrast proved spontaneously a key to all the errors, which we felt obliged to notice in the men of eminence concerned. We now affirm confidently, that the thesis could be proved, by mere induction, of the Teuton, as it has been of the Roman side. The task would even be much easier, as the documents are here more ample, and are dissembled by no pedagogical prepossessions of classicality. But such a survey were superfluous to the argument now closed, and which, besides, has been extended to the limits of the article. We can admit, then, but an instance, which combines a threefold efficacy: It exemplifies the contrariety between the products of the two races; it negatives, in particular, the existence of the product, on the assumption of which rests chiefly the system of Niebuhr; in fine, it illustrates the value and the mode of using the new clew.

It is familiar to the reading world, that the principal expedient by which Niebuhr attempted to expound the infancy of Roman history, was the assumption that it must have been transmitted to times of record, by means of popular songs or lays in praise of great events and actors. So much is this his main stay, that it has given his scheme, among its followers and antagonists, the name of the "ballad-theory." The existence of such songs in primitive Rome he cannot prove. He can but cite a few lapidary fragments in Saturnian verse, which he quite arbitrarily disposes into what he thinks a ballad metre; and for a second trace, some metrical lines or phrases in Livy, of which, however, we above encountered a less apocryphal account. To this he adds the testimony of Cato and Pliny, who allude to an ancient usage of chanting songs at the Roman banquets. But conceding the antiquity, which may be relative, were the songs *ballads?* Were they based upon public acts or events—were they historical? Or were they but emotional, hilarious, at most, descriptive of the physical or social qualities, as is most usual on such occasions? In the absence of specific information from those authors, the latter must be held to be the species in question. This will be immediately confirmed from a sounder source, with the addition, that the Roman songs had been still further from the heroic.

But is it possible a man of sense should ground a system upon this basis? No, assuredly; and Niebuhr did in reality present it but as what lawyers call an "inducement," if not a blind, to his hypothesis. Greek antiquity had its rhapsodies, which gave a ground-work to the national history; and mediæval Teutonism had some lays, which might do likewise. Rome, concluded Niebuhr, must therefore have had something similar, since all nations do alike, at least at equal social stages.

Now, this fundamental premiss the foregoing pages prove absurd. Men or nations, on the contrary, are never like, in either time or space; if they had been so, they could never have formed States, or left the woods.[1] A social class of which the members, a nation of which the classes, a civilization of which the nations, should be or act or think alike, would be like creatures of which the parts were all legs or heads or arms. These various groups must, as the first condition towards composing an organism, have the main organs not only different, but even contrasted in their natures. In the great European system, this opposition was found accordingly in its three operative races, Roman, Teutonic, and Celtic. Whence it follows, that, if the lay be really natural to the Teutons (to say nothing of the Greek example, which belongs to an earlier system), no like compositions can have been possibly indigenous to Rome.

The consequence is borne out by the national character assigned the Romans. The spirit called *paternal* excludes the notion of heroism. Where protection and dependence are still a portion of the inmost nature, the popular sentiment is veneration or awe, not praise or admiration. These latter feelings, which are quite opposite, can have their rise but in a state where both the duty and the dependence of protection are relaxed, where liberation from the despotism of the family has made some progress, where the fathers must court the favour which they no longer can command, and the people are transported by an unexpected championship. But this condition the Roman nation had never attained; it remained bound up to the last in the threefold *solidarity* of father and children, master and slaves, patron and clients. Accordingly, we saw the direct testimony of Cicero, who says the Romans viewed their kings (whose rank must make them perpetual types), not as "heroes" or as rulers, but as "protectors, fathers, gods." The popular poetry addressed to such must be of the nature of hymns, and of laments upon occasion of death. And both these species are accordingly well attested in Roman annals. The poetry of the paternal side would naturally be erotic, the expression of the procreative aspect of the national function. It is famous or infamous in the Fescennine verses. This was also, no doubt, the nature of the banquet songs referred to, as is confirmed by certain mystical allusions to the youths who sang them.

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[1] We are speaking, of course, in this place, exclusive of religion.

A further proof of this appears in the maturity of Roman poetry. The topic of the greater part of it is still love, when not obscenity. Ovid, Catullus, Propertius, Tibullus, and even Horace himself, are best characterized by this,—to say nothing of the satirists, who sometimes sink into bestiality. Virgil and Lucretius, then, remain the sole exceptions; and even of these it is worth remarking, that the finest passages treat of love. The same instinct of paternity inspired as duly and predominantly their descendants, the Italians, in both their infant and mature poetry. Ginguiné,[1] speaking of the former, after having been relating that the Arab and Provençal poets sung, among other things, of heroism, proceeds to say: Les premiere poets Siciliens et Italiens ne furent rien de tout cela. *Un seul subjet les occupe, c'est l'amour.* Petrarch, Bocaccio, Ariosto, and even Tasso, nay Dante himself, will answer equally for its maturity.

But as to epic or heroic ballads, there is no trace of them at either age of either nation, the Italian any more than the Roman. When there is anything of this nature in Mediæval Italy, it is translation or transfusion of the romances of France and Wales. It does not seem that this hiatus had occurred to Niebuhr as an objection to his theory of the lays of ancient Rome. The poet of the school has proved more logical or better read. Macaulay has endeavoured indirectly to remove it, by suggesting that the native products of this description were suppressed, or at least repressed, through the influx of Greek and Sicilian poetry. He may only have been imposed upon by the authority of Tiraboschi, who makes a similar apology on a different occasion (Stor. Litt. Ital., vol. iv., p. 1225, Milano). Or, more probably, the plea was prompted by an argument of the master, who has alleged a like invasion, from the same sources, in ancient Rome, in explanation of his inability to adduce something of this ballad poetry. Yet they must both have known that influxes occur but into voids. Indeed, there could be no more striking attestation of the void in question than this recurrence of the same phenomenon under circumstances so diverse—than the fact, that an Italian poet, if he would soar above the native topics, should say with Virgil: Sicelides musæ, paulo *majora* canamus.

The main hypothesis of Niebuhr is therefore false in point of fact, and would in logic be absurd, if the ballad proper were indeed Teutonic. But this is also an assumption very liable to question. The primitive poetry, like the race, should have been warlike, not historical. There is nothing of the latter character in even the longest of the German lays. In our Anglo-Saxon section of the family, which is best known to us, the patriotic efforts of the Bishop of Dromore have been unable to gather anything really genuine of this nature. Any versified romances were here also from Wales and France. Even minstrelsy, he owns, was introduced by the French Normans. He shows the Saxons must have had music, and presumes a poetic accompaniment. This, in fact, was the true character of both the English and German minstrelsy; the poet was second to the musician, as is suggested in his name of "Gleeman." The thing is consonant to the warrior and muscular predominance, which seeks excitement to the *emotions*, not to the *appetites*, like the paternal. Hence the specialty of lyric poetry to the Spartan section of the Greek nation, and their subserving it invariably to music and even dancing. This latter element has also, by a singular conformity, brought in the English name of "ballad," from the Italian, where it denotes dancing.

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[1] Hist. Lit. de l' Italie, tom. i. p. 438.

Such was doubtless, then, the poetry most congenial to our Saxon ancestors. The fact explains why Bishop Percy found all, or almost all, his "reliques," of a more or less historic caste, in the north of England, on the Border. It is that there the same race were again in contact with the Teutonic, as that which poured in from the west the wondrous tales of the Round Table. The worthy Bishop seems to feel it, and tries to parry the objection by saying, naively, that the Scotch themselves produced such poetry but on the Border. He overlooked that the Highland Scotch could neither speak nor sing his language; and, on the other hand, that in their own, they had such poetry in much higher purity.

In fact, the epic or historic lay is the specific emanation of the races we distinguish as constructive or synthetic. This accordingly is its definition, and even the import of the term *poetry*. Another testimony to its relative superiority and subsequence is the particular denomination itself of *epic;* for the pleonastic epithet of epic or *word*-poetry was in distinction from the *music*-poetry, the minstrelsy which preceded. It is the narrative (in fact or fiction) that marks the Celts in France, Spain, Britain. The minstrelsy is equally appropriate to the Teutons. If the Scandinavian section offers really an exception, it was a relic of the ancient Cimbric—that is, Celtic—residence in the Peninsula. The Scalds may well have been an imitation of the Bards.

But Niebuhr was, for all this, but a step the farther from the truth. And there is no exaggeration in concluding that such lays as have been furnished by the Celtic Macaulay for the ancient Romans, might be, with perhaps more philosophy, ascribed to the Choctaw Indians.

Art. II.—Professor Owen's Works.

1. *Lectures on the Comparative Anatomy and Physiology of the Invertebrate Animals.* By Richard Owen, F.R.S., Hunterian Professor to the College. 8vo, London, 1843.
2. *Lectures on the Comparative Anatomy and Physiology of the Vertebrate Animals, Fishes.* By Richard Owen, F.R.S. 8vo, London, 1846.
3. *On the Archetype and Homologies of the Vertebrate Skeleton.* By Richard Owen, F.R.S. London, 1848.
4. *On the Nature of Limbs.* By Richard Owen, F.R.S. London, 1849.
5. *On Parthenogenesis.* By Richard Owen, F.R.S. London, 1849.
6. *Zoology; or Instructions for Collecting and Preserving Animals, in a "Manual of Scientific Enquiry, prepared for the use of H.M. Navy."* By Richard Owen, F.R.S. London, 1849.
7. *Odontography; or a Treatise on the Comparative Anatomy of the Teeth.* By Richard Owen, F.R.S. London, 1840.
8. *Description of the Skeleton of an Extinct Gigantic Sloth.* By Richard Owen, F.R.S. London, 1842.
9. *Memoir of the Pearly Nautilus.* By Richard Owen, F.R.S. London, 1832. See also,
10. *Todd's Cyclopædia of Anatomy and Physiology;*
    Art. *Mammalia.* Lond., 1847. Art. *Marsupialia.* 1847.
    Art. *Monotremata.* 1847. Art. *Aves.* 1836.
    Art. *Mollusca.* 1847. Art. *Cephalopoda.* 1836.
    Art. *Articulata.* 1836. Art. *Acrita.* 1836.
11. *Publications of the Palæontographical Society*, 1849, 1851, 1853.
12. *Proceedings of the Zoological Society*, I. IV. V. etc.
13. *Reports of the British Association*, from 1838 to 1857.
14. *Proceedings of the Geological Society*, 1838 to 1857, etc.
15. *Edinburgh Philosophical Magazine.* Vols. xiv., xxv., xxxiii., xxxv., xxxviii., xxxix., xlii., xlvii., xlix., l., etc.
16. *Encyclopædia Britannica.* Art. *Mollusca.* Vol. xv., 1858.

We have not the least intention of even attempting anything like a minute analysis of the works quoted above. An entire number of this Journal would not suffice for such a task; besides, the majority of our readers would not be very willing to follow us into strictly anatomical discussions, for which they can have little or no liking, however interesting such may be—

> "To men of science, osteologists,
> And surgeons . . . . ."

Who

> "Spend raptures upon perfect specimens
> Of indurated veins, distorted joints,
> Or beautiful new cases of curved spine."[1]

Our chief desire is to present an outline-sketch of the life and labours of Professor Owen, and to indicate as we proceed the great importance of his discoveries, both to the student of natural science and to the natural theologian. It may help to set these discoveries before our readers in stronger relief, if we glance at the state of the natural sciences before Professor Owen began his work. "The human understanding," says Bacon, "is most excited by that which strikes and enters the mind at once and suddenly, and by which the imagination is immediately filled and inflated. It then begins almost imperceptibly to conceive and suppose that every thing is similar to the few objects which have taken possession of the mind, whilst it is very slow and unfit for the transition to the remote and heterogeneous instances by which axioms are tried as by fire, unless the office be imposed upon it by severe regulations and a powerful authority."[2] In this aphorism we have pointed out one main persistent hindrance to the advancement of the natural sciences. Most men in looking at natural objects, are satisfied with first impressions, and shrink from the labour implied in every attempt to correct these, by minute and painstaking investigation. It is, moreover, not very pleasant to be told that, the seeing eye is far from being an unerring guide in such matters. Some, however, are found in every age who are not satisfied with general outward resemblances, but who love to penetrate into the things which *seem* like, and to judge of them by the unvarying likeness or unlikeness of internal structure. Such men become the "powerful authorities" who ultimately impose their views on the general intelligence of the community, and thus correct impressions founded on changeful outward resemblances. The men who have, more than any others, performed this office for natural science are, Aristotle, Linnæus, Cuvier, and Richard Owen; that the number of "the mighties" is so small, may, perhaps, account for the slow progress towards a thoroughly comprehensive, philosophical, and trustworthy system of zoological classification. Aristotle was undoubtedly as far ahead of his predecessors, as Cuvier was of Aristotle. But what a dreary period intervened from the time of the Stagirite to the French Baron! The progress is both more rapid and more reliable now. It has been reserved for a very brief period in the world's history to exhibit advances to an understanding of the structure of the human frame, and of its varied functions, of which the thousands of years that preceded it shew us no similar record. So truly is this the case, that it may be safely affirmed more has been accomplished in acquiring a correct knowledge of the animal kingdom, since 1795, the year in which Cuvier gave to the world his first important contribution to natural science, than ever had been in the past ages of the world. It is no doubt true, that, prior to 1795, John Hunter had been working in new fields, and treasuring up observations of the very highest importance, and that Abernethy had characteristically struck right into the heart of Hunter's investigations and discoveries;[1] but great as were these labours, and highly important as were their results, they are to be regarded (especially those of Hunter) mainly as rough sketches of that great field in which Cuvier became so highly distinguished, and in which Richard Owen has become even more so. It is impossible to form a just estimate of Owen's labours, without taking into account those of the great French naturalist; for though the former stands on ground wholly his own, and which no other man has before occupied, there can be no doubt of the debt which he owes to the latter—a debt which, in the candour of true science, he is ever willing to acknowledge. It is with them, as with Turner and Claude in painting; Turner is independently great, though it is doubtful if, without the works of Claude, he would ever have painted that marvellous bit of cloud which hangs side by side with Claude's *chef d'œuvre* in the National Gallery.

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[1] Mrs Browning.

[2] Novum Organum, lib. i. aph. xlvii.

The Normandy Tutorship, into which the pecuniary difficulties of Cuvier's father forced his earnest, warm-hearted, and enthusiastic son, became one of those seemingly trifling events which have so often been found to give direction to the whole after-life of celebrated men. And nothing illustrates so fully the existence of that beneficent net-work of Providence, in the midst of which each man stands as a centre, acted upon and influenced by circumstances in themselves little worthy of notice. Thus, the cuttlefish found on the shore at Fecamp, and the terebratulidæ, cast up by workmen in 1791, from local fossiliferous strata, guided Cuvier to those two aspects of his great work, with which his name will ever be associated—the anatomy of molluscan animals, and the study of palæontology in the light of living organisms. He had, in short, found a thoroughly scientific basis for the study of zoology; and, at the same time, a key to the structure and the habits of those varied forms of old world life, whose remains the rocks have hid in their hearts for millions of years, in order that they might tell to this generation the wondrous story of the ways of the Great Creator, when no human eye looked on them. Previously to the time of Cuvier the literature of natural history (using the term in the general Baconian sense as, "The History of the Works and Arts of Nature,") was, as described by Bacon, nothwithstanding the great achievements of Linnæus, only a map of "fables, antiquities, quotations, frivolous disputes, philology, ornaments, and table-talk."[1] A select company, both in Britain and on the Continent, had, no doubt, broken away from all this, and were earnestly at work breaking popular idols, and letting the light of true science in upon that huge system of superstition, which an avaricious priesthood delighted to foster and make capital of, and which Protestantism, though interested in its removal, and unwilling to countenance it, was yet too ill-instructed in the natural sciences to be able to do anything very effective in rescuing the people from it. The publication of the "Regne Animal" (1817) may be considered the climax of Cuvier's labours. He was then forty-six, in the height of his fame, and in the rich, ripe vigour of his mind. He died in 1832. Six years previously, Owen had entered officially into that path in which Cuvier had walked with such success; and had commenced investigations, which were soon to result in most valuable additions to our knowledge of the works of God, in opening up new sources of pleasure to the naturalist, and in showing that zoology, is not only one of the most fascinating of the sciences, but one of the most useful likewise.

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[1] Hunter died in 1793, the year in which Abernethy published his "Surgical and Physiological Essays."

Richard Owen was born at Lancaster, on the 20th July 1804. We may pass over his early years, and need do no more than refer to his studies in London, and his apprenticeship to an apothecary and practitioner in his native town. In 1824, he matriculated in Edinburgh, where, in the class-room behind the Old High School, at the foot of Infirmary Street, he attended the extra-Academical Lectures of Dr Barclay, the most accomplished teacher of comparative anatomy of his day, and the author of the well-known treatise "On Life and Organisation," a work which, from the fine Christian spirit which pervades it, from the breadth of view shewn by its author in dealing with the peculiarly difficult questions discussed, and from the thorough exposure which it gives of the absurdities of materialism, can not only stand the test of advanced science, but can claim a place above many recent works on the same subjects. After leaving

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[1] Instaur. Mag., p. i., l. ii., c. iii.

Edinburgh, Owen returned to London, and renewed his intimacy with his former friend and preceptor, Abernethy. It will be in the memory of as many of our readers as are acquainted with the "Life of Abernethy," by his admiring pupil Macilwain,[1] how much Owen was indebted to the dashing and eccentric physician, in being put in the position fitted, above all others, to give scope to his great talents.

"And here," says Macilwain, "we must pause, to record one of our numerous obligations to the perceptivity and justice of Abernethy. We have formerly observed, that at the very commencement of life, he had been accustomed to inculcate the importance of studying comparative anatomy and physiology, in order to obtain clear views of the functions of man; but all arrangements made with this view, from the time of Mr Hunter onwards, though varying in degree, still were inefficient. It was next to an impossibility to combine an availing pursuit of a science, which combines an inquiry into the structure and functions of the whole animal kingdom, with the daily exigencies of an anxious profession.

"When Mr Owen had completed his education, his thoughts were directed to a surgeoncy in the navy, as combining a professional appointment with the possibility of pursuing, with increased opportunities of observation, his favourite study. Fortunately for science, he went to Abernethy, who requested him to pause. He said, 'You know the hospital will not have any but apprentices. Macartney left on that account. Stay,' said he, 'and allow me to think the matter over.' This resulted in his proposing to the Council of the College of Surgeons (1826) that there should be a *permanent* Professor of Comparative Anatomy, and that the appointment should be given to Mr Owen.

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[1] Memoirs of John Abernethy, F.R.S. By George Macilwain, F.R.C.S. 2 vols. London: Hurst and Blackett, 1853. In these volumes the contrast between John Hunter and John Abernethy, is exceedingly well put. Hunter, plodding and circumspect; ever in search of facts, and satisfied with them when found. Abernethy, capable of as much industry and earnest pains-taking application; but so soon as facts were found, hastening to set them in practical relation to other facts, as if impatient of their isolation. The former contented in seeing the ultimate usefulness of his discoveries; the latter dashingly eager to force them into immediate use. The one content with the gold in the nugget; the other never satisfied until he gave it the guinea's stamp, and made it coin current. Hunter's address ever reminded his audience of water poured from a narrow-necked vessel; Abernethy's speech flowed on smoothly and easily. "John Hunter," Abernethy used to say, "is always thinking;" but his own thoughts influenced by a lively fancy, were ever seeking expression. Hunter's most pregnant and suggestive discourses had an effect on all but the select few, like what Chatterton ascribed to Johnstone's *Irene*, when put on the stage—pit and gallery welcomed it with a nap, and "critics snored applause." Abernethy's lectures, on the contrary, were clear, sparkling, abounding in apt illustrations, and carrying interest to all. "Never were two minds so admirably suited for the heavy-armed pioneering in science; and the comparatively light-trooped intellect, which was calculated to render the first clearing easily convertible to those practical necessities with which science had to deal. Accordingly we find that Abernethy very soon extended Mr Hunter's views, and applied them so powerfully, as at least to create the dawnings of a science."

> "This is among the many proofs of Mr Abernethy's perception of character. Mr Owen had dissected for lecture; and Abernethy saw, or thought he saw, a peculiar aptitude for more general and enlarged anatomical investigation. The whole world now knows how nobly the professor has justified the hopes of his talented master. It would be out of place for us to attempt a compliment to a man so distinguished in science, wherein the varied pursuits of a practical profession allow us to be mere amateurs; neither do we wish to forget other gentlemen who have distinguished themselves in this branch of science; but we believe that most competent judges allow that the celebrated Cuvier has not left any more fitted to appreciate his excellence, or who has more contributed to extend that science of which the Baron was so distinguished a leader, than Professor Owen."—Vol. ii., p. 242.

We need only read the list of works at the head of this article to see the splendid results to science of Professor Owen's thirty years' labours in the Hunterian Chair. But the energies of the Hunterian Professor were not confined to his special work. He has given the benefit of his services, and the weight of his name, to most of the recent great movements for sanitary and educational reform. In 1844–5, he was one of the Commissioners for inquiring into the sanitary state of large towns and populous districts. In 1846, he was a Commissioner (unpaid) for inquiring into the sanitary state of the metropolis; and a member of the Royal Commission (unpaid) to inquire into the live and dead meat markets of London. This Commission resulted, as is well known, in the removal of the Smithfield nuisance. At the Great Exhibition, in 1851, he was chairman of a jury; and, on the resignation of Prince Lucien Bonaparte of the chairmanship of Jury xi., "Alimentary Substances," at the Paris Exhibition Universelle, in 1855, Professor Owen was appointed in his stead. This Jury was the first to finish their work, and was, we believe, the only one whose decisions were unchallenged. On the retirement, in 1856, of Sir Henry Ellis from the Chief Librarianship of the British Museum, the Government very wisely determined to place the natural history department under a distinct head from the department of antiquities and the library. This led to the appointment of Professor Owen to the directorship of the natural history department. With this office, however, he is permitted to combine professional work, and gives an Annual Course of Lectures at the Government School of Science, Jermyn Street.

But let us return to his works, which indeed "are the chief events of a scientific man's life." Those now under review were written during the thirty years' occupancy of the Hunterian Professorship. They are many, and all of great interest and value. In studying them, we have more than once been reminded of a quarry in one of the Scottish coal-fields, over which we have often wandered. Speaking of it recently to a workman, he said, "Yes, we have everything here." Below an alluvial deposit several feet deep, and as beautifully stratified in its beds of loam, sand, clay, and gravel as the underlying deposits, lie at least twelve feet of first-rate freestone. Then there are seams of ironstone nodules and coal, the latter about one foot thick, resting on another deposit of freestone twelve feet deep, in which unnumbered stigmaria have found a resting place. While at a little distance, and maintaining the same direction and degree of dip, there occurs a deep deposit of carboniferous limestone, rich in corals and the remains of molluscan life. There is some truth in the workman's remark. The freestone supplies material for house building; the coal yields fuel to the neighbouring hamlet; the ironstone nodules are carted to some distance and calcined; the limestone is quarried and employed for agricultural purposes; and the characteristic fossils yield abundant interest to geologists, young and old. What this quarry is to the neighbourhood, Professor Owen's works have been for years to sages and sciolists—to men long skilled in the application and in the literature of science—and to young naturalists, eager to attract a public to *their* theories for solving some of the difficult problems connected with the habits, the development, and general biological relations of past and present forms of animal life. To one class, especially, have Owen's works been a rich quarry. But for his writings, many so-called "Handbooks of Science" could not have been written, or, if written, would have been given to the public minus their most attractive pages. Without them, too, what would have been the value of many a popular lecture on subjects thoroughly and originally discussed by Owen?

The appointment to the Hunterian Professorship ushered Owen into work in which he was soon to find exercise for his highest powers, and for the application of all his acquirements in anatomy and zoology. Six years after Hunter's death, the government had purchased the large and peculiarly valuable Hunterian Physiological Collection, and, at the request of the highly accomplished Mr Clift, the conservator of the collection, Mr Owen was associated with him, with the view of furnishing complete Catalogues of the varied specimens. The results are well known and highly appreciated.[1] By the self-denying labours of Mr Clift, and the devotion to science of Professor Owen, the Hunterian Collection is now fitted to accomplish such a work in Britain as the magnificent collection of Cuvier, in the Museums of the Jardin des Plantes, has long done in France. Both of these collections, though differing in their leading feature, are well fitted to guide in the only safe way for the study of natural science—that of observation and comparison. Messrs Clift and Owen met with difficulties, in fairly entering on their work, analogous to those which opposed themselves to Cuvier, when he, in the well known incident, "found himself surrounded by broken pieces of many hundreds of skeletons of more than twenty distinct species of animals, heaped up in a confused mass around him." In his case, the difficulty was to separate bone from bone, to classify these, and to build up the skeletons of animals whose species had perished from the earth. But this difficulty discouraged him not. On the contrary, it tended to develope his zeal for science, and to give full scope to his great acquirements. His success made him famous. Years after, as we shall see, Owen was to accomplish something in the same department even more remarkable. But what we now refer to is, the unsatisfactory condition in which the Hunterian Preparations in Comparative Anatomy were found. The dissected animals were before them, but under forms wholly, and as it would have seemed to most men, hopelessly, unlike the originals. But if these were to be pressed into the service of science, if they were to be turned to those practical purposes in theoretical and in applied science for which they were originally designed by their illustrious collector; the species of animal needed to be determined, the relation of one preparation to another indicated, and to each the distinctive name affixed. There was only one way in which this could be satisfactorily done; and we need only mention it to suggest Owen's extensive attainments, breadth of view, great power of minute observation, and large sagacity. It was necessary to have such a correct knowledge of the structural and functional characteristics of the living creatures, represented by the wholly altered dissected specimens, as to be able to identify them severally with these. The triumph over the difficulty reads us a lesson in industry, perseverance, and zeal in the cause of truth. And here we may notice what seems to us an outstanding feature of Owen's works. He is peculiarly successful in the use he makes of hypothesis and of generalization. The progress of his favourite sciences, during the last ten years, bears testimony to this. Skill in making hypothesis a stepping stone to the bringing out of facts and the discovery of general laws, marks the possession of the highest type of mind. For the thousands who work on meritoriously in making observations, conducting experiments, and recording results, we will not be able to reckon the tens who have the power to arrange these into distinct groups, or who, while drawing from them thus brought together some clearly determined meaning, can discover in them a foundation for hypotheses for the solution of difficulties still connected with them. Thus hypothesis becomes a natural starting point for further investigation, and a ground of hope for future discovery. The statement of the hypothesis forms a rallying point: all who question it seek for facts opposed to it, while all who accept it labour for its corroboration. The rivalries of science help on the progress of knowledge, and the antagonistic action of individual minds results in harmony, by the establishment of some great truth. The works under review abound in illustrations of this. Some of these we may have occasion to notice as we proceed.

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[1] Catalogue of Pathological Specimens, 2 vols., 1830. Of Monsters and Malformations, 1831. Of Natural History Preparations, 3 vols., 1833, 1834, 1836. Of Preparations relating to Generation and Development, 2 vols., 1840. And, before Professor Owen left the Museum of the College of Surgeons for his present office, he had finished the Catalogue of Hunter's Fossils.

In presenting to our readers a general outline of Professor Owen's contributions to science, we shall not follow them in the order of time in which they were given to the public; because, though this method has advantages, as showing the growth of his views and the various steps by which he has reached a point so high above his fellows, the advantage is more than counterbalanced by the repetitions which would be unavoidable. Nor shall we attempt to look at all the magnificent additions he has made to science. This would neither consist with the space allotted to us, nor with the popular character of our sketch. The first contribution to which we wish to direct considerable attention is that on *Parthenogenesis*—a term used to indicate the propagation of some of the simplest forms of life, and of certain insects by virgin mothers. And as the Hunterian Lectures on "The Comparative Anatomy and Physiology of the Invertebrate Animals" (1843) fitly supply a basis for the difficult and deeply interesting discussions on Parthenogenesis, we shall glance at some of them. The correct appreciation in the introductory lectures, of the proper work of anatomy in its relations to physiology, gives rich promise of the interest of the investigations, opens up the author's breadth of view, and illustrates the importance and difficulty of the discussions.

> "Comparative Anatomy," he says, "fulfils only part of its services to Physiology, if studied exclusively in relation to the varieties of a given organ in different animals. The combinations of all the constituent organs in one animal must likewise be studied; and these combinations, with the principles governing them, or the correlations of organs, must be traced and compared in all their varieties throughout the animal kingdom."

This is illustrated by tracing the progressive complications of the heart, from its first appearance as the simple dorsal vessel up to the dicœus (two cavitied) heart of the higher types of animals, and by pointing out its peculiar functions in such a form of life as the snail. Its existence in the fish is shown to fulfil one purpose, and in the snail another—

> "In the snail it is so placed in reference to the breathing organ, that it receives the aërated blood from that organ and propels it to the system; it is an organ for the circulation of arterial blood, in other words, a systemic heart. The bipartite structure of the central organ of circulation, compared with lower or higher conditions of the same organ, could never have taught that fact; the knowledge of it necessitates and pre-supposes a knowledge of the relation of the heart to the lungs. In the fish the bipartite heart is so connected with the breathing organs, that it transmits exclusively to them the blood which the auricle receives from the veins of the body; it is an organ for the circulation of venous blood, in other words, a pulmonic heart."

Thus the need of a "Knowledge of the laws of correlation of organic structures," in order to the successful pursuit of any of the highest branches of Zoology, and thus the need, likewise, of an acquaintance with Zoology, in order to the profitable application of comparative anatomy. The necessity for the combined knowledge of these two great departments of natural history grows, as might be expected, as the range of discovery widens, and as collateral branches of science develope, because a more complex system of classification becomes necessary—a system whose leading features are found in structural peculiarities. A natural system, having for its basis certain great, patent characteristics, however well adapted for the infancy of a science or for assisting non-scientific readers, must fail to satisfy all who carry their investigations into minute questions as to organic structures and functions. It is soon found that acquaintance with these break in upon, disturb, or overturn the generalizations of a natural system. Thus Aristotle's division of animals into blood-having and bloodless was found unsatisfactory, when it was discovered that many of the latter class possessed as true blood, though differing in colour, as the so-called sanguineous species; and though this led to the Linnæan modification of red-blooded and white-blooded animals, it did not long satisfy the requirements of science. It was reserved for Cuvier to enunciate a system of classification, in which zoology and comparative anatomy were to be so linked together as to supply the foundation for a theory, in which the names employed are relatively suggestive of distinctions in structure and in functions. We may afterwards refer to the very important modifications which Professor Owen has made on the system of Cuvier. By the help of the microscope the investigations of the comparative anatomist have been carried into fields long hidden from him, and we can now listen to his descriptions of the structure and habits of forms of life, so wondrously minute, that a single drop of water may form a world for a dwelling place of about five hundred millions of them.[1] With such groups of microscopic life the opening Lectures on the Comparative Anatomy of the Invertebrate are occupied. The covering of some of them is shown to be thin transparent skin; that of others a shell of pure colourless silex, as varied in its markings as the shells of well-known mollusca. The modes by which a succession of species is kept up among creatures so minute, supply some of the most interesting subjects of zoological study. Professor Owen has done much to let light in upon these, and he has pointed out striking correspondences between the development of infusoria and that of the ovum of higher animals. Referring to these analogies of structure, he says :—

> "Vibratile cila—their sole organs of locomotion—are the first actively moving parts with which the mammiferous ovum is endowed, with which, therefore, we ourselves commence life. They are retained throughout life as an essential part of the organization of a very extensive tract of our internal mucous membranes."

This hint has proved a fertile source of speculation, and has led to discussions of the most important kind.

In treating of Entozoa, or internal parasites, he groups them under two great classes—Cœlelmintha, or worms with a true abdominal cavity; and Sterelmintha, or worms destitute of this, that is, with a solid body. The investigations on Entozoa are conducted in a fine spirit :—

> "In creatures," he says, "surrounded by and having every part of their absorbent surface in contact with the absorbent and vitalized juices of higher animals, one might likewise have anticipated little complexity and less variety of organisation. Yet the workmanship of the Divine Artificer is sufficiently complicated and marvellous in these outcasts, as they may be termed, of the Animal Kingdom, to exhaust the utmost skill and patience of the anatomist in unravelling their structure, and the greatest acumen and judgment in the physiologist in determining the functions and analogies of the structures so discovered."

The simplest and lowest forms of Entozoa are the *acephalocysts* —mere headless bags, as the name implies—consisting of a globular or oval vessel filled with fluid, and varying in size from a pea to that of a child's head. They have the power of propagating their species by discharging smaller acephalogs from the outer or inner surface of the parent cyst. These are taken possession of by another of the entozoa (*Echinoccus*), higher in the scale of organization, which uses them in the same way that the hermit crab (*Pagurus*) does the Univalve into which he creeps without ceremony, but with a firm instinct that in his case might makes right. We have next a review of the genus Cystecercus, one species of which (*Cystecercus Cellulosæ*) "is occasionally developed in the human subject. It has been met with in the eye, the brain, the substance of the heart, and the voluntary muscles of the body." Then there are the different species of Tænia, one of which loves no *subject* but a British one, while another has a peculiar fancy for the intestines of the Sclave. Will none of our ethnologists take a hint here, and astonish the world with yet another theory on a plurality of races, based on the tastes of the Cestoidean Entozoa? Some of the existing theories have foundations far less reliable than one which might be found in the facts relating to the habitats of the tape worm!

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[1] *e.g.* the *Monas Crepusculus* of Ehrenberg.

But we must leave the deeply instructive lectures on the anatomy of the Invertebrata. We have touched only on so much of them as might be held to bring us to the edge of our remarks on Parthenogenesis. The lectures are so well known that a fuller analysis of them is unnecessary. They abound in illustrations of Professor Owen's varied accomplishments, and exhibit his finely reverent spirit as he meets in his researches with abounding evidences of the wisdom, power, and goodness of the Creator. The discoveries of the old naturalists are duly estimated—light is let in upon the absurdities of materialistic views—systems of classification are corrected—species are distinguished by features which continue unvarying, and the anatomist brings into common view those testimonies to the manifold wisdom of God, which, in their very nature, lie hid from unscientific observers. Science thus becomes what she should ever be, both the true promoter of a practical and useful knowledge of the forms, living or dead, around us, and the handmaid to a trustworthy natural theology.

The phenomena to which we have referred under the name of Parthenogenesis, applied to them by Owen, and which are variously characterised by other naturalists as Alternations of Generations (*Generations wechsels*), Digenesis, Geneagenesis, etc., when first made known gave rise to many wild theories in the literature of speculative science. Dreams of spontaneous and equivocal generation, and of transmutation of species, which Christian naturalists had hoped were long ago buried out of sight, and less likely, as knowledge advanced, ever to be revived, suddenly arose to claim the attention of men. Even right-hearted men of science were found willing to dissuade their more courageous brethren from what they held to be attempts to penetrate into the mysteries as to generation which the Creator never intended to make plain to man. They forgot that, in placing man amid His manifold works, God set no other limit to his knowledge of them than that which is, and ever must be, found in the limited and imperfect faculties of the most accomplished. But while the works and their constituted interpreter remain together, the interpreter must labour to understand their meaning, to penetrate their mysteries, and to unravel their secrets. "The works of the Lord are great, sought out of all them that have pleasure therein." It seems strange that, even when we have come to enjoy the fruits of the scientific research of past generations, during which it was discouraged or regarded with suspicion by the Church, there should still be found the same suspicions of science, and the same readiness to discourage it as hostile to faith, or perilous to the Infallible Word! Now, we cannot over-estimate the advantage both to natural science and natural theology, in having at such crises men like Owen. Their firm persuasion that all the works of the God of Nature are in complete harmony with the views which he has given of Himself in His Word will lead them to weigh calmly, and in the spirit of a true philosophy, the phenomena held either to be suggestive of new forms of error or corroborative of old ones. Their broad sagacity, ever on the alert for great truths, as the result of many minute and faithfully painstaking observations, will fit them for fully appreciating the seemingly contradictory statements of students destitute of their large power of generalization. They will be able to trace the apparent antagonisms, seen only by inferior minds, to some centre of harmony, which shall seem as thoroughly consistent with the rigid demands of science as with the claims of Scriptural truth. And thus, by their commanding influence, a reliable platform is revealed from which minds but lately at variance can set out with the view of further discovery. The Lectures on Parthenogenesis, now under review, supply a notable illustration of this. We do not believe we are underrating the valuable labours of other accomplished naturalists in this field when we affirm, that we are mainly indebted to Owen for the recent rapid increase of knowledge as to the condition, habits, structure, and modes of propagation of the forms of life mainly associated with this subject. Something had been done before; but the peculiarly valuable, and profoundly interesting contributions of Van Beneden, Siebold, Kölliker, Quatrefages, Huxley, etc., have been made since 1849, when "Owen's Parthenogenesis" was published. Having made this statement, we do not intend in the following outline to confine our remarks to the volume now referred to. We wish rather to lay before our readers a rough sketch of some of the interesting topics which have turned up in the investigations and discussions connected with the phenomena.

The distinction between mere existence and life has been more or less definitely felt by naturalists rather than clearly seen. While, however, seeking after an exact definition of the difference, or while proceeding on the belief that it is well marked and understood, they have used modes of expression in which the distinction is entirely lost sight of. If we might hazard a statement of the difference, we would say, that existence simply implies inert being, whereas life supposes the presence of an active power which, in virtue of a present force inherent and self possessed, acts in the way of growth, of sustained vital action, of change from a lower to a higher form, and of transformation. This definition may be broken up into two parts; one of which will include vegetation, and some of those beings which constitute the connecting links between animals and plants; and the other, every form of animal life. Chemical, structural, and functional peculiarities form the basis for this subdivision. The materialistic attempts to confound the two have generally been associated with one of two things—either ignorance of those sciences which supply the basis for a philosophical definition, or a class of motives whose presence must be held to vitiate their alleged scientific findings, or to cast suspicion on their assertions.[1] Again, it is much more characteristic of the age than many who charge it with mere surface work in all things are willing to admit, to fall back on first principles—to test observation, not by theory or by prevalent notions of general laws, but by repeated observation; to subject to thorough analysis alleged discoveries; and to strive after a deeper insight into the forces which regulate organic and inorganic beings. We rejoice in this, even though we see the tendency to isolate favourite pursuits, and thus to miss the correcting or modifying influences of phenomena associated with other pursuits. This prevailing characteristic will not fail to shelter the Church from the effects of the crude speculations of imaginative, would-be savants, and it will clear the onward path of science, by laying such firm and reliable foundations for research, for theory, and for wise hypothesis, as will not make it necessary to take one step back for every two made in advance, in order to remove the rubbish which gathers in the way. We meet with this present tendency to fall back on first principles, and to seek information on the beginning of things in all the natural sciences. In Botany we see it in the increasingly great attention which is being bestowed on vegetable physiology; in geology it has led to innumerable discussions on what in truth geology has nothing to do with, the creation of the world; and in chemistry we have not a few revivals of speculations which look very like those old theories of final causes, which Bacon characterised as barren and profitless. But in no department of natural science is this tendency so broadly marked as in that which deals with the doctrine of generation. The questions, what is life? what is vital force? what is growth? and is growth and generation one and the same?[1] are being put with an earnestness which, if it find not a satisfactory answer on the trustworthy basis of observation and induction, will not fail to find one in the imagination of the observer. The anatomist sees a new field opening up to him, wider than any into which his predecessors had gone, and also more intensely interesting from the very difficulty in conducting his researches on the lowest forms of organic being, and from the novel and, in many cases, startling transformations through which many of them pass—transformations in order to development, in which each modification of constitution and of structure supplies new material on which to try his skill, and hints ever freshly recurring of more wondrous things than those in the midst of which he stands, by inclination not less a worshipper of the Creator than a man of science.[2] To the physiologist also, the field is not less interesting and attractive. He can follow the various forms, from the cell mass up to the perfect animal, and observe the modifications of action occurring in connection with modifications in structure, and with the apparent halts which take place in the march of some well-marked object—halts during which, what he may have recently regarded as the perfect growth of one creature, passes into another form on which he had looked as a member of a distinct species, and which, as such, had found a distinct place in the nomenclature of science. The observations of Professor Owen, among the forms of life now referred to, have been varied, valuable, and full of interest. The student of natural theology will find much worthy of notice if he will penetrate, with Owen as a guide, into a department of scientific investigation, which may be truly said to reveal evidences of the wisdom and power of the Creator, not surpassed, if equalled, by anything he will meet with among the highest forms of animal life. The researches to which we now allude assume two aspects, one of which we would limit to questions touching the constitution and analogies of the primary germ cell animal or vegetable, that is embryology, properly so called; the other we would associate with the development of the embryo, by the differentiation of that which was originally a homogeneous mass. In the latter case, we would not look for explanations of the causes of this differentiation, but would simply ask the naturalist to watch its action, in order that we may have a trustworthy record of its stages, and be thus enabled to classify these, so that different forms of life may be kept distinct, and offspring linked up with their true parents. The results of this would be interesting to all. The man of science would be thankful for getting rid of much prevailing confusion, and the general reader would rejoice in the discovery, on the one hand, of the thoughts of God as the great Creator and Preserver of all things, by the marvellous wisdom exhibited in the existing modes for the propagation of species; and, on the other hand, by the increasing revelation of the general harmony of plan which obtains among a class of organic beings which, until very lately, were not known to exist, and which are even yet but imperfectly understood. This is the true work of the naturalist, as the interpreter of nature. And how fruitful of the riches of knowledge it comes to be to all; while to the Christian philosopher it is suggestive of those treasures which, as the fruits of his study, he may year after year lay on the altar of love as his testimony to the manifold wisdom of God. The prevailing harmony which led God to call all things good would also appear unto man. For unto God the many-stringed lyre of creation is in perfect tune, and unto Him it has, ever since the sons of God rejoiced at the birth of time, sent forth sweetest melody. "All thy works praise Thee O God." But creation has not seemed thus to man. A few of the leading strings of the mighty lyre have appeared to sound grandly, when touched by the hands of those whose hearts are right with God, and whose faces, like the face of the sweet singer of Israel, pictured on some of our old Bibles, are turned towards the serene, deep blue overhead, as if to them the place of eternal calm was surely beyond. But it has not been thus with all. One string and another has been believed to be out of tune. This is shown not to be so, and the lyre will increasingly send forth its full rolling harmony, in proportion as our knowledge of the works of God increases, and as the students of science grow, not in knowledge only, but in faith and love also. The work goes on. Wise men are hastening from the east and the west, from the north and from the south, to lay their gifts of gold, of frankincense, and of myrrh at the feet of Him who was born in Bethlehem, because by "Him also the worlds were made."

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[1] For some admirable remarks on this subject, see Huxley's Article in the *British and Foreign Medical Review*, October 1853.

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[1] "Wolf long ago taught that the bud was identical with the seed; but no one, I believe, has carried this doctrine to its legitimate conclusion, namely, that generation is only a form of growth."—*Sea-Side Studies.* By G. H. Lewes. Blackwood and Sons. The work now referred to is another testimony to the varied accomplishments of the author of the "Biographical History of Philosophy." It is full of interest, abounding in graphic sketches, and full of sea-side life pictures. In every way, outside and inside, it is a most attractive book. Scientifically, we have more than once missed a link in the chain of observation, and have been constrained to jot down opposite several statements *not proven*. We, at the same time, dissent from Mr Lewes's theory as to the identity of growth and generation. While to non-scientific readers the expression will be suggestive of error, to men of science it will seem only fitted to hide the acknowledged difficulty, without bringing them any nearer a true solution.

[2] "Imagine a lily producing a butterfly, and the butterfly in turn producing a lily, and you would scarcely invent a greater marvel than this production of medusæ (from a Campanularian Polype) has to its first discoverers. Nay, the marvel must go further still; the lily must first produce a whole bed of lilies like its own fair self, before giving birth to the butterfly, and this butterfly must separate itself into a crowd of butterflies before giving birth to the lilies."—Lewes, *ut supra.*

Without entering into the deeply instructive discussions on "The Cell Theory," which meet us in all recent treatises on Animal and Vegetable Physiology, we would refer our readers to the able article of Mr Huxley, already mentioned, which contains the clearest exposition of the subject we have met with. Meanwhile, the profitable result of these discussions may be stated thus:—"Vital phenomena are not necessarily preceded by organisation," but organisation is the effect of life already imparted—already present. If we ask what is that force which is potential to development, to increase, to growth properly so called, we are led to the very edge of creation; the existence of cause is suggested, and we are made to feel that, though as to the true nature of that, there is but a hair's breadth between us and perfect knowledge—full revelation of the great mystery into which the mightiest intellects of earth have earnestly desired to penetrate; yet we cannot, it is not in the nature of things that we ever should, pass over this narrow threshold and stand on the same platform with the Fountain of Life, where the light shineth, and where there are no shadows, no mysteries, for He knoweth all things. In science then, as in grace, the distinct recognition of the personality of God, as the primal source of being, is thrust on us at that point at which mind cannot penetrate further, even while it feels that there is much to be known beyond; a point, then, at which those of noblest faculties are constrained to acknowledge their littleness, weakness, and ignorance. "The ablest endeavours," says Owen, finely, "to penetrate to the beginning of things do but carry us, when most successful, a few steps nearer that beginning, and then leave us on the verge of a boundless ocean of the unknown truth, dividing the secondary or subordinate phenomena in the chain of causation from the First Great Cause."[1]

The Lectures on Parthenogenesis deal mainly with Owen's views of generation, reproduction, and development of certain lower forms of life. He shows that, in the animal kingdom, reproduction implies the existence of a nucleated cell, called the germinal vesicle or seed receptacle; and another such cell, called the sperm cell, the product of which is the "spermatozoon" or life-containing seed. These, when brought together, form the primary step in animal life. This product, the germ mass, undergoes certain metamorphoses. It may, for example, die, and in its death "minister to the life of a being higher than itself." But Owen propounds a theory of very great moment as to some of the phenomena belonging to the matters now referred to. He alleges that all the germ mass may not be required for the formation of the characteristic animal body. "Certain of the derivative germ cells may remain unchanged, and become included in that body which has been composed of their metamorphosed and diversely combined or confluent brethren." These again may, in certain circumstances and under certain conditions, result in the realisation of the same animal, as in the case of Aphis, without passing again through the simple process implied in the formation of that body into which they had passed.

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[1] Parthenogenesis, p. 3.

"Cells predominate in the tissue of the vegetable kingdom, the lower members of which consist exclusively of them, and have been thence called 'plantæ cellulares;' the lowest of all consist of a single nucleated cell. The animal kingdom starts from the same elementary beginning." The lowest form here traced is the *Gregarina*, a parasite which infects the internal cavities of insects and worms. Then, rising higher, we have certain, so-called polygastric infusoria, in which secondary cells are seen forming special organs, as for digestion, etc. In some of these a process is observed in which the divisions of the germ cell seem to force each other to positions equi-distant, and these in time separating, form distinct individuals. This is reproduction by spontaneous fission. In the *hydra* or fresh-water polype, "the progeny of the primary impregnated germ cell, retained unaltered in the body, may set up the same actions as those to which they owed their own origin." Thus, the nucleated cells which are formed around the adhering foot of *hydra fusca*, push out buds in which a centre of assimilation is formed, communicating for a season with the stomach of the parent. This communication is afterwards closed, and the result is a perfect polype. This is propagation by gemmination, and differs from development *ab ovo*, because in this case the impregnated germ cell is included in the body of the parent and not in a chorion or egg covering. "The hydra so developed may propagate again by *ova*, and these two kinds of generation may alternate indefinitely." Some of these simple forms of life pass through several changes, at each of which a distinct individual appears. "Thus we have a trematode entozoon (one of the class characterised by their suctorial pores), successively assuming the form of a Gregarina, a Cercaria, and a Distoma." We have Medusæ producing *Hydra Tuba*, this again a Strobila, which in its turn produces a Medusa. So with Echinus. Prof. Müller "found in the sea, at Heligoland, a transparent acalephoid animalcule, which he called *Pluteus paradoxicus.*" This changed into the ophiura or brittle starfish, while another kind of Pluteus passed into an Echinus. These are some of the mysterious revolutions of the wheels of life, which Owen has long watched with so much advantage. The same phenomena are met with among certain insects. It finds a striking illustration among the *Aphides* or plant-lice. The eggs are deposited in the leaf axils, and in spring wingless six-footed larvæ are developed from them. These again will produce a succession of broods without any connection with the males. If the virgin progeny be kept apart, the parthenogenesis, or true virgin birth, will go on even to the eleventh generation. A provision is thus made for their multiplication to an extent scarcely credible. In Lecture XVIII. of the Comparative Anatomy of the Invertebrata, Owen has made the following calculation of the rate of increase :—

"The *Aphis lanigera* produces each year ten viviparous broods, and one which is oviparous, and each generation averages 100 individuals.

1st	generation,	1 aphis produces
2d	„	100.
3d	„	10,000.
4th	„	1,000,000.
5th	„	100,000,000.
6th	„	10,000,000.000.
7th	„	1,000,000,000,000.
8th	„	100,000,000,000,000.
9th	„	10,000,000,000,000,000.
10th	„	1,000,000,000,000,000,000.

If the oviparous generation be added to this, you will have a thirty times greater result," p. 235. As might have been anticipated, many theories have been advanced with the view of accounting for the now undoubted virgin-birth discovered among the animals to which we have referred. The theory of Owen, which has been severely tested, and which continues as the only satisfactory one, has already been mentioned. His explanation is, that "the primary or parent germ cell has equally divided its spermatic virtue among its countless progeny." Again, he says, "the condition which renders this seemingly strange and mysterious generation of an embryo without precedent coitus, possible, is the retention of a portion of the germ mass unchanged."

The Lectures on Parthenogenesis gave a strong impetus to the investigations now under review, and soon suggested collateral researches of great importance. We can now follow the different stages of development through which some of these creatures pass, and mark with certainty the influence which modifications of form have both on their habits and habitats. The propagation of Gregarina forms one of the most curious and wonderful episodes of animal life. Its structure is of the simplest kind, consisting of a single cell filled with granular matter. In shape it is elongated oval, and its only mode of motion in its strange dwelling-place—the intestinal canal of the earth worm—is by a process of contraction and expansion of its substance. When Gregarina is going to throw off a progeny, two animals meet, change their shape from elongated oval to hemispheric, and then coalesce in one sphere. From this mass, thus perfectly united or rather amalgamated, a numerous family is thrown off in minute particles. These are held to be embryo Gregarinæ. The next point in the development is not so clearly made out, because the creature must migrate into another dwelling. But the form in which it is supposed we next meet with it is one which, in its turn, passes through several stages, until it reaches its highest as Cercaria, a tiny, active, unresting creature, with triangular-looking head, well marked internal vesicles, and tail. It next loses its tail, enters the pupa state, finds its way into the body of the snail, and is met with there as Distoma—the full grown Trematode entozoon.

The migration of many of the entozoa forms a subject of much interest. It has been fully illustrated in connection with the development of cestoid worms. In the liver of the rat and mouse a small creature is found (*Cysticercus fasciolaris*), which must pass into the body of another animal before it can attain to perfect growth, and has been clearly traced by Dr Nelson, Siebold, and others, as the tape worm of the cat (*Tænia crassicolis*). The death of the one animal is thus necessary, in order that another living within it may pass into a higher form of life. Again, cestoids inhabiting snails, etc., on which different birds feed, are found as fully developed Tænia in the elementary canals of the vertebrata which thus prey upon them. As this question of migration comes to be more understood, we will meet increasingly with mysteries of being in quarters which, until lately, were not regarded at all. And as the work of discovery proceeds, new material for admiration and praise will be brought out before all who take pleasure in seeking out the works of God, following the footprints of His wisdom, and tracing the evidence of His goodness and His love.[1]

But it is more than time that we should indicate what constitutes the main element in Professor Owen's greatness. We mean his researches and discoveries in comparative anatomy. These form his chief claim to the admiration and gratitude of the civilised world. In many instances, indeed, these have not passed into the minds of the public, as associated with his name. They have been received by men of talent, and by them expounded and set in popular aspects. One great hindrance to their direct reception from Owen himself, is found in the purely scientific nomenclature in which they are for the most part expressed. For though his works on comparative anatomy abound in passages of great beauty, in grand thoughts, in picturesque descriptions, in great generalisations, and in rich revelations of most instructive and suggestive evidences of design, yet the frequency with which words, uncouth to all but scholarly readers, are used, often unnecessarily, unfit his writings for even distantly competing with the more popular expositions of far inferior men. A highly intelligent man said to us lately, "I have often set about trying to study Owen's works, but have as often been forced to give up the endeavour by his appalling terminology." There is much truth in this. It does try one's Greek and Latin not a little to catch at once the distinctive thoughts contained in many of the compound words to be met with in all his writings. And yet we cannot but acknowledge the rare merit which he justly claims, in connection with his labours, in simplifying and, at the same time, giving determination to the language of comparative anatomy. In many cases in which preceding anatomists have used a variable nomenclature in describing the skeleton, and have given different names to the same bone, Owen has avoided the confusion and hesitancy to which this naturally gave rise, by rejecting both, in some instances, and associating the bone with a word more exactly descriptive than either; and, in other instances, by compounding the two in such a way as to suggest, by the complex term, both of the thoughts indicated in the two names. The value of this is very great. Students of mental science know how readily error associates itself with vague terms, and how quickly these lead to endless doubts and discussions. This is not less the case in minute descriptions of the complicated animal skeleton; and, especially, in discussions on "homology," with which Owen's name is so intimately connected. Not only might a broadly misapplied term lead to error, but a term also in which there is even one subordinate phase of thought suggested which is not appropriate to the bone described, would land the student in the same result. When Mr Owen first endeavoured to give scientific expression to his views on the Homologies of the Vertebrate Skeleton, he was well aware that his attempts to give determination to the existing variable nomenclature, and to introduce terms more distinctive and exact than those in use, the charges of rashness, presumption, and pedantry would be made against him. He might have foreseen, too, that several of the most formidable objections to some of his views would arise out of that devotion to old terms which ever interferes with a just appreciation of the precise ideas intended to be suggested by new ones. He has, accordingly, put on record his own apology for the so-called innovations. This we give in a note.[1] But it must not

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[1] We refer our readers, who wish a fuller view of modes of generation, etc., to the very valuable article on "The Ovum," by Dr Allen Thomson, in Todd's *Cyclopædia of Anatomy and Physiology*, Sept. 1852.

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[1] "The degree," he says, "and extent of the diversity of my determinations from those of other anatomists, are shown in the succeeding columns, headed by their names; and I proceed now to give the reasons which have compelled me, in such instances, to dissent from the high authority of Cuvier, Geoffroy, Meckel, Hallmann, and Agassiz. These reasons will exonerate me, I trust, from the reproach of underrating their justly-esteemed opinions, which have been abandoned only where nature seemed clearly to refuse her sanction to them. The instances of such dissent are much fewer than they appear to be at first sight. In most cases, where the names differ, the determinations are the same. For 'basilaire,' which Cuvier exclusively applies to the 'pars basilaris' of the occiput, and which Geoffroy as exclusively applies (in birds) to the 'pars basilaris' of the sphenoid, I have substituted the term 'basioccipital'—a term which, as it is more descriptive of the bone in question, will perhaps be more acceptable to those who prefer a determinate to a variable nomenclature, since Cuvier himself has almost as frequently applied to that bone the term 'occipital inférieur' as the term 'basilaire. For the descriptive phrase, 'occipital latéral,' the term exoccipital, proposed by Geoffroy, is preferable; especially since the paroccipital is the most 'lateral' of the elements of the occipital bone, in the definite sense in which the term 'lateral' is used in the precise and excellent anatomical nomenclature of Dr Barclay." In the same way he vindicates the use of "supra-occipital," as preferable to "occipital supérieur" of Cuvier, the "inter-pariétal" of Cuvier, Agassiz, and Geoffroy; the "Squama occipitalis" of Hallmann, and the "Hinterhautschuppe" of Meckel and Wagner. His defence of his other innovations is equally successful. "And if," he adds, "the purists who are distressed by such harmless hybrids as 'mineralogy,' 'terminology,' and 'mammology,' should protest against the combination of the Greek prefix to the Latin noun, I can only plead that servility to a particular source of the fluctuating sounds of vocal language is a matter of taste; and that it seems no unreasonable privilege to use such elements as the servants of thought; and, in the interests of science, to combine them, even though they come from different countries, where the required duty is best and most expeditiously performed by such association."—*Homologies of the Vertebrate Skeleton*, pp. 9–18. If it be an objection to the nomenclature of French anatomists, that they deal more in descriptive phrases than in single expressive terms, it is no less so to that of German, that, while their language is even more susceptible of happy combination than Greek is, yet the results are such as unfit it for ever becoming the current language of anatomical science. This remark will at once commend itself to the eye of our readers, if they will glance down the following columns, in which the names given to several parts of the endo-skeleton by Owen are contrasted with those used by Meckel and Wagner:—

OWEN.	MECKEL and WAGNER.
Basi-occipital.	Hinterhauptbeinkörper.
Supra-occipital.	Hinterhauptschuppe.
Pre-opercular.	Vorkiemendeckelstück.
Sub-opercular.	Unterkiemendeckelstück.
Supra-orbital.	Oberaugenhöhlenbein.
Supra-temporal.	Augenbogogenschuppe.

"Such terms," Owen remarks, "are likely to be restricted to the anatomists of the country where the vocal powers have been trained from infancy to their be forgotten how great the boon is which Owen has conferred upon science by his improvements in its terminology. A language of comparative anatomy, which the highest authorities in Europe and America agree in accepting, must greatly facilitate interchanges of thought, and, in the long run, help forward discovery.

Reference has already been made to the ability of Cuvier in determining the relation of bones of different animals, most of which had belonged to extinct species, when set before him in a confused heap. He brought bone to bone, and built up with unerring precision the entire skeletons of many different species. Something in this direction had no doubt been done by preceding anatomists, but it required that breadth of knowledge, varied scientific attainment, great industry, and withal, fine philosophic spirit, which met in the greatest of French naturalists, to carry the labours of others to successful results. It was also reserved for him to discover to all how powerful this instrument might become, not only in the comparative anatomy of man and of the lower animals, but also, in making geology what it had not hitherto been, namely, a field in which might be worked out information even as to the climatal condition of past epochs of the world's history—information which was to become the foundation for some of the grandest generalisations which can occupy the mind of man. Professor Owen was put in circumstances by which, in this department, he is seen standing side by side, and on the same lofty platform, with Cuvier. Bones and fragments of bones of extinct vertebrata, destitute, however, of the parts which the illustrious Frenchman regarded as a necessary basis for reconstruction, were submitted to him, but he was not at fault. He had recourse to other elements, lying further out of sight and more difficult of application, but possessing the advantage of being likely to be met with in every fragment of bone. With these as bases, he felt he could not only reconstruct the entire animal by getting the key to it in a small fragment, but that he might form a reliable estimate of its habits, of the climate under which it existed, and of the general condition of the localities frequented by it. These elements he found in the impressions which the nerves and blood-vessels leave on the bones traversed by them. The employment of his own and of Cuvier's tests have led to those wonderful results with which all students of natural science are familiar. His memoirs on the bones of extinct mammalia, and on those of the Struthious birds of New Zealand, are also well known. The incidents connected with the determination of the bones of the Dinornis, though often told, will bear repetition. We give them in the words of the biographer of Abernethy:—

"A seafaring man brought a piece of bone, about three or four inches in length,[1] as he said, from New Zealand; and offered it for sale at one or two museums, and, amongst others, at the College of Surgeons. We shall not here detain the reader by telling all that happened. These things are often brought with intent to deceive, and with false allegations. Most of those to whom the bone was submitted, dismissed it as worthless, or manifested their incredulity; amongst other guesses, some insinuated that they had seen bones very like it at the London Tavern, regarding it, in fact, as part of an old marrow-bone, to which it bore, on a superficial view, some resemblance. At length it was brought to Professor Owen, who having looked at it carefully, thought it right to investigate it more narrowly; and, after much consideration, he ventured to pronounce his opinion. This opinion, from almost anybody else, would have been perhaps only laughed at; for, in the first place, he said that the bone (big enough, as we have seen, to suggest that it had belonged to an ox) had belonged to a bird; but, before people had had time to recover from their surprise or other sensation created by this announcement, they were greeted by another assertion yet more startling—namely, that it had been a bird without wings.

"Now, we happen to know a good deal of this story, and that the incredulity and doubt with which the opinion was received was too great for a time even for the authority of Professor Owen entirely to dispel. But mark the truthfulness of a real science; contemplate the exquisite beauty and accuracy of relation in nature! By-and-by, a whole skeleton was brought over to this country, when the opinion of the Professor was converted into an established fact."

In a short time several distinct species were determined from bones sent from New Zealand—as dinornis, palapterix, notornis, etc.

We cannot do more in this article than generally indicate the manifold contributions which Owen has made to Palæontology. They meet us in every geological text-book. The outline sketches of *Megatherium*, *Labyrinthodon*, *Mylodon*, *Palæotherium*, *Anoplotherium*, *Thylacotherium*, *Phascolatherium*, etc., which adorn their pages, may remind us how much he has done in this department. The accurate science and the high mental endowments brought to bear on the determination of the remains of extinct animals, are well illustrated in one of his most recent contributions to Palæontology—"On the Affinities of the Stereognathus Ooliticus," a Mammal from the Oolitic Slate of Stonesfield.[2] In the following extract we have a good example of Owen's power. The portion quoted is preceded by an exact scientific description and comparison of the portion of jaw submitted to him—a piece about nine inches in length, containing three molar teeth—but this description would not be intelligible without the figures which accompany it.

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[1] Six inches long and 5½ in circumference at its smallest part.

[2] Quarterly Journal of the Geological Society of London. Feb. 1857.

"The interest," he says, "which the above-described fossil from Stonesfield oolitic slate excites is not exclusively due to its antiquity, its uniqueness, or its peculiarity: much arises out of its relations as a test, in the present state of Palæontology, of the actual value of a single tooth in the determination of the rest of the organization of an animal, or of so much of it as serves for a recognition of the place of the extinct species in the zoological series: the attempt, at least, to analyse the mental processes by which one aims at the restoration of an unknown mammal from a fragment of jaw with a tooth cannot be wholly useless.

"That the fragment in question is the jaw of a mammal is inferred from the implantation of the tooth by two or more roots. Most mammals are known to have certain teeth so implanted. Such complex mode of implantation in bone has not been observed in any other class of animals. The rule is deduced from the number of observations, positive and negative. Why two or more roots of a tooth should be peculiar to viviparous quadrupeds, giving suck, is not precisely known. That a tooth, whether it be designed for grinding hard or cutting soft substances, should do both the more effectually in the ratio of its firmer and more extended implantation, is intelligible. That a more perfect performance of a preliminary act of digestion should be a necessary correlation, or be in harmony, with a more complete conversion of the food into chyle and blood,—and that such more efficient type of the whole digestive machinery should be correlated, and necessarily so, with the hot blood, quick-beating heart and quick-breathing lungs, with the higher instincts, and more vigorous and varied acts, of a mammal, as contrasted with a cold-blooded reptile or fish,—is also conceivable. To the extent to which such and the like reasoning may be true, or in the direction of the secret cause of the constant relations of many-rooted teeth discovered by observation,—to that extent will such relations ascend from the empirical to the rational category of laws. So much, briefly, at present, for the grounds of reference of the *Stereognathus* to the mammalian class.

"The broad sex-cuspid crowns of the molar teeth of the *Stereognathus* might crush vegetable matter or insect cases: a recognition of their adaptability to uses observable in the nearest resembling teeth of existing animals leaves the above wide field of choice or guess, as to the nature of the food of the oolitic animal. Let us take the latter hypothesis, and endeavour to work out more of the *Stereognathus* on the basis of its multicuspid and assumed insectivorous tooth. Insects fill the air, creep on the ground, burrow in the earth, move on and in the waters. In the living world of animals we have insectivorous molars associated with a frame and limbs modified for flying, running, burrowing, and diving. The principle of the mechanism for crushing insects being the same, it is secondarily modified in each genus of insectivora; and so modified, though without affecting the crushing power of the tooth, that the odontologist discriminates at a glance the grinders of the bat, the hedgehog, the shrew, or the mole.

"At present we can only refer such secondary modifications, as we do those of the more complex grinding teeth of the herbivora, to that principle of *variety in non-essentials* which makes the leaf in each kind of tree unlike, and, as it is affirmed, which makes no two leaves, in any single tree, exactly alike.

"If the tooth of the *Stereognathus* were like those of any known recent or fossil insectivore, we should infer that the rest of its organization was like such insectivore, and so classify it according to the degree of similitude. But as we know of no sufficient ground for the association of any given particular modification of the multicuspid tooth with such aërial, terrestrial, or aquatic modification, as the case might be, of the rest of the frame, our conclusion would be an empirical one; and, having regard to the narrowness of its support from observation, would not be such as to leave the mind free from a sense of the possibility of its being liable to be proved to be an erroneous conclusion. On the hypothesis of the *Stereognathus* being an insectivore, there is no known group or form of marsupial or placental insectivora to which it can be referred.

"The course of observation has shown that the teeth of the smaller kinds of hoofed herbivora, such as the peccari, the hyrax, and the chevrotains, approach in their cuspidate character in the smaller amount of the cement, and in the simpler disposition of the enamel, to the form and structure of the teeth in the insectivora. A nearer approach is made by some still smaller species of extinct hoofed quadrupeds, to which reference has been made in the body of this paper. The shape, disposition, and number of the cusps in the molars of the *Stereognathus* have appeared to me to be more like those in *Microtherium*, *Hyracotherium*, etc., than in any known, recent or extinct insectivore. Just in the ratio of this resemblance, therefore, is the inclination to view the *Stereognathus* as a hoofed rather than a clawed mammel; as having been herbivorous rather than insectivorous, and as having been most probably a mixed feeder."

The monograph on the Stereognathus contains also the clearest statements we have met with on the province and application of physiology in the determination of fossil remains, and on the connection between Cuvier's views of the law of correlatation of animal forms and physiology. Reference is thus made to the views of one of Cuvier's contemporaries:—

"Geoffroy St Hilaire denied the existence of a design in the construction of any part of an organised body: he protested against the deduction of a purpose from the contemplation of such structures as the valves of the veins or the converging lens of the eye.

"Beyond the coexistence of such a form of flood-gate with such a course of the fluid, or of such a course of light with such a converging medium, Geoffroy affirmed that thought, at least his mode of thinking, could not sanely, or ought not, to go. Now this objection has, at least, the merit of being intelligible: we know on what ground the adversary stands and what he would be at.

> "From this frank assertion of the tenets of the Democritic and Lucretian schools, those concerned in the right conception and successful modes of studying organised structures by the young have little to fear. But the insinuation and masked advocacy of the doctrine subversive of a recognition of the Higher Mind,—the oft-recurring side-blows at teleology,—call for constant watchfulness and prompt exposure.
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> "It is not, however, my business here to go over the arguments which have been adduced by teleologists and anti-teleologists from Democritus and Plato down to Cabanis and Whewell."

Not less instructive to the general reader are many other of Professor Owen's contributions to scientific periodicals. The magnificent monograph "On the Fossil Reptila of the London Clay," contributed in 1849 to the *Papers of the Palæontographical Society*, contains the following as the concluding words of the description of the crocodilia:—

> "Had any of the human kind existed and traversed the land where now the base of Britain rises from the ocean, he might have witnessed the Gavial (*Gavialis Dixoni*—Owen) cleaving the waters of its native river with the velocity of an arrow, and ever and anon rearing its long and slender snout above the waves, and making the banks re-echo with the loud, sharp snappings of its formidably-armed jaws. He might have watched the deadly struggle between the crocodile and the palæothere, and have been himself warned by the hoarse and deep bellowings of the alligator, from the dangerous vinicity of its retreat. Our fossil evidences supply us with ample materials for this most strange picture of the animal life of ancient Britain; and what adds to the singularity and interest of the restored 'tableau vivant,' is the fact, that it could not now be presented in any part of the world. The same forms of crocodolian reptile, it is true, still exist: but the habitats of the gavial and the alligator are wide asunder, thousands of miles of land and ocean intervening: one is peculiar to the tropical rivers of continental Asia; the other is restricted to the warmer latitudes of North and South America; both forms are excluded from Africa, in the rivers of which continent true crocodiles alone are found. Not one representative of the crocodilian order naturally exists in any part of Europe; yet every form of the order once flourished in close proximity to each other in a territory which now forms part of England."

Many of Owen's most able papers are to be met with in *Todd's Cyclopædia*. The scope of two of these may be indicated—the one on the *Monotremata*, the other on the *Marsupialia*.[1] In the article on "Monotrematous Animals," he extends the views of Sir Everard Home, and corrects those of Geoffrey St Hilaire in regard to the *Ornithorhyncus paradoxicus*, and assigns to it its true place among the mammalia. By a singularly interesting application of comparative anatomy to individual Echidna (*Hysterix and Setosa*), and to ornithorhyncus, he conclusively sets at rest the long-continued discussions, touching the exact position of these animals, indicates their partial alliance to marsupialia, and gives prominence to certain broadly-defined characteristics which reserve them for a place distinct, as a sub-class, from the true-pouched animals. There are few better illustrations than in the article on "Marsupialia," of the combination in its author of great patience of research, the faculty of nice discrimination, varied scientific accomplishments, and a thoroughly-trained power of induction, in order to correct and large generalizations. So early as 1839, Owen proposed, at a meeting of the Zoological Society, a system of classification for Marsupialia, based mainly on dental characteristics.[1] The proposed dental formulæ are applied, in the paper now noticed, to representative members of the five tribes[2] of pouched animals, and the truthfulness of the dental formulæ is fully corroborated, by a succeeding full anatomical examination of certain marsupials.

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[1] Vol. iii., 1847.

Owen seems to rejoice when dealing with types of life which possess structural peculiarities of an intermediate kind—peculiarities which, at one time, appear to suggest the propriety of associating them with a class of animals higher in the scale than they, and, at another, as clearly to suggest that their true place will be found among a lower type of life. Such creatures afford scope for the application of varied scientific attainments, and call into lively exercise all his powers. This is seen in the mode in which he deals with the monotremes; and it finds a full illustration in his papers on the remarkable *Lepidosiren annectens*,[3] of the Amazon and the Gambia. He graphically describes the points at which it bears a very strong resemblance to the reptile, but which fail to fix it in the same tribe from the icthyic characteristics which are found to prevail. In the same way he deals with those points at which it exhibits a hankering after a place among the higher cartilaginous fishes; while he shows that they fail in fixing its place as among them, because of the prevalence of resemblances to the true osseous types.

But we must leave this mode of remark, and indicate yet higher aspects in Owen's works. A comprehensive view of the discoveries associated with his name, would not fail to impress us with their singular importance to the student of natural theology. In making this statement we do not affirm, either that their theological relations were before him in his work, or that in the heart of his scientific investigations he is ever conscious of the thoughts of God as revealed in these. This may or may not have been always the case. Sometimes it was, as we have seen, in expressions already quoted. All we imply in the statement is, that a thoughtful mind, exercised under the love of a consciously present personal God, will be sure to see the importance of Owen's works to natural theology. His labours in Palæontology afford abundant material for illustrating the controlling presence of the Divine mind in the successive realisations of those grand epochs which had all passed away before man,—the noblest of the works of God,—appeared among the works of the present epoch. No one can intelligently follow Owen's descriptions of forms of animal life, from the mollusc of the Silurian up to the megatherium of the Pleistocene, without becoming conscious that they bear testimony to the gradual evolving of a plan at every point of which Order is richly suggested. If, again, we leave this broad general ground, and follow him as he deals with any one creature, and understand so as to appreciate the comparison or contrast, either of its own different parts or of these parts with their affinities in other creatures, and the dependence of such animals on the climatal condition of the world at the time, we will often be startled by the direct, positive testimony to those unities of plan in which the natural theologian finds some of his most sure foundations. This, however, assumes even greater interest when the thought which lies farther out of sight is revealed, namely, that which assigns more prominence still to the presence of God by the exhibition of law—of rule—according to which He has worked from the beginning. We shall refer more fully to this. Nor has he, knowingly or not, rendered less service to the hitherto favourite theme of natural theology,—the adaptations of means to ends,—the correspondence between instruments and work,—between structures and functions. We need only refer for illustrations of this to his works on "The Nature of Limbs;" on "Odontography;" and on "The Skeleton of an Extinct Gigantic Sloth" (*Mylodon robustus*, Ow.)

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[1] Tran. Zool. Soc. ii., p. 315; Proc. Zool. Soc. vii., p. 5; Ann. Nat. Hist. iv., p. 118.

[2] *Sarcophaga—Entomophaga—Carpohaga—Poephaga—and Rhezophaga.*

[3] Proc. Linn. Soc. 1838. Miscrosc. Soc. Lond. Feb. 1840.

No one will withhold his admiration from a man who can pass under review hundreds of specimens of living or extinct species, and, as if by intuition; though really by an ability the fruit of severest labour and discipline, single out parts of correspondence or difference, arrange into groups, main and subordinate, and assign to each a name which passes into the nomenclature of science without opposition, because it has an obvious foundation in structural peculiarities. This rare talent is often seen in Owen's writings. Sometimes it is met with in shrewd hypotheses of the ultimate direction which half finished processes of scientific induction are likely to take. At other times it is seen in the way in which he follows general laws of development to points at which the general aspects are lost sight of—are merged in the individual and special; much in the same way as in households, the features of a child are seen bearing at different stages of growth, a resemblance to each of the old family portraits on the wall, until these, at a certain period, cease to be generally the features of the family, and become permanent in a countenance unlike them all. This same power has enabled him, in his work on "Homology," to give expression to the ideal archetype after which all the vertebrata seem to have been formed.[1]

The "Homologies of the Vertebrate Skeletons,"[2] is the last of Professor Owen's works to which we mean to refer. And in doing so, we beg to repeat, that we have not attempted a full analysis of his numerous writings. We have not even mentioned many of the most important of them. We hope, however, that we have already given such samples of the fruit as will tempt others to seek it where it hangs, in rich ripe clusters.

"Relations of homology," says Owen, "are of three kinds: the first is that above defined, viz., the correspondency of a part or organ, determined by its relative position and connections, with a part or organ in a different animal; the determination of which homology indicates that such animals are constructed on a common type; when, for example, the correspondence of the basilar process of the human occipital bone with the distinct bone called 'basi-occipital' in a fish or crocodile is shown, the *special homology* of that process is determined.

"A higher relation of homology is that in which a part or series of parts stands to the fundamental or general type, and its enunciation involves and implies a knowledge of the type on which a natural group of animals, the vertebrate for example, is constructed. Thus,

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[1] We need scarcely refer to the interest of the theory of the archetypal idea in connection with God's modes of self-manifestation in the Bible. For example, the tabernacle was made after a pattern in the heavens, shown to Moses in the Mount, and the main thoughts which cluster around the tabernacle find a lodging among the spiritual tracery, and the sacramental pillars of the New Testament Church.

[2] "ANALOGUE."—A part or organ in one animal which has the same function as another part or organ in a different animal.

"HOMOLOGUE."—The same organ in different animals under every variety of form and function."

The little "Draco volans" offers a good illustration of both relations. Its fore limbs being composed of essentially the same parts as the wings of a bird, are homologous with them; but the parachute being composed of different parts, yet performing the same function as the wings of a bird, is analogous to them. Homologous parts are always, indeed, analogous parts in one sense, inasmuch as, being repetitions of the same parts of the body, they bear in that respect the same relation to different animals. But homologous parts may be, and often are, also analogues of each other, inasmuch as they have the same relation of subserviency to swimming. So, likewise, the pectoral fin of the flying-fish is analogous to the wing of the bird; but, unlike the wing of the dragon, it is also homologous with it."—P. 7.

when the basilar process of the human occipital bone is determined to be the 'centrum' or 'body of the last cranial vertebra,' its *general homology* is enunciated. If it be admitted that the general type of the vertebrate endo-skeleton is rightly represented by the idea of a series of essentially similar segments succeeding each other longitudinally from one end of the body to the other, such segments being for the most part composed of pieces similar in number and arrangement, and though sometimes extremely modified for special functions, yet never so as to wholly mask their typical character, then any given part of one segment may be repeated in the rest of the series, just as one bone may be reproduced in the skeletons of different species, and this kind of repetition or representative relation in the segments of the same skeleton I call 'serial homology.' As, however, the parts can be namesakes only in a general sense, as centrums, neurapophyseo, ribs, etc.; and since they must be distinguished by different special names according to their particular modifications in the same skeleton, as *e. g.* mandible, coracoid, pubis, etc., I call such serially related or repeated parts 'homotypes.' The basi-occipital is the homotype of the basi-spheroid; or, in other words, when the basi-occipital is said to repeat in its vertebra or natural segment of the skeleton the basi-spheroid or body of the parietal vertebra, or the bodies of the atlas and succeeding vertebræ, its *serial homology* is indicated."—(P. 7.)

General homology thus deals with the relation of a part, or of a series of parts, to a recognised fundamental type. Special homology treats of the structural (anatomical) relation of parts in different animals, whether or no such parts perform the same functions. Thus the broad distinction between analogy and homology—the former having reference to functions, the latter to structures. The wing of the insect is analogous to the wing of the bird, because both are used for flight, but they are not homologous, because anatomical affinity cannot be predicated of both. Whereas the wing of the bird is homologous to the fore-limb of the mammal, because they correspond in their anatomical relations. Again, serial homology deals with the relation of corresponding parts in the same skeleton. The benefit which has resulted to zoology as a science, from these distinctions, has been very great. The confusion which has so often arisen from want of precision in the use of such words as analogy and affinity, has been avoided, and the student has had set before him a nomenclature fully fitted to help him in his profoundest researches. These remarks may prepare the way for a popular *resumé* of the views on this subject. The discussions raised when it was first brought out touching the now general accepted vertebral theory of the skull, tended to give much prominence to it. Indeed, on the truth or falsehood of this the whole system so elaborately expounded by Owen must stand or fall. In 1806, the gifted, but materialistic and intellectually eccentric Lorenz Oken, when wandering among the Hartz Mountains, came upon the skull of a deer, washed white by the weather, and having its pieces partially dislocated. One of those stray thoughts which wait only on genius, and often lead to great results, flashed in the soul of Oken, and under its power he cried—"It is a vertebral column." Led by this he soon found means for verifying it. In every investigation his first impressions were confirmed. But not satisfied with the discovery that the bones of the head are true vertebræ, he pushed the theory to extremes which made it ludicrous, by alleging that the extremities are repeated in the head. Thus the noted description of the "cephalic members," in his work on the "Elements of Physiophilosophy."[1] "Both pairs of limbs," said the highly imaginative Zurich Professor, "are repeated in the head, because in it the whole trunk is repeated; the upper jaw corresponds to the arms, the lower jaw to the feet." "The digits are repeated in the teeth, the teeth are claws!"—(P. 408.) Cuvier dissented from the general theory of Oken, as to the cranial vertebræ; but, with various modifications, it was virtually accepted by the greatest of modern anatomists, as Dumeril, De Blainville, Carus, Meckel, Geoffroy St Hilaire, etc. The objections of Cuvier are elaborately reviewed by Owen, and their want of force pointed out. He also subjects Oken's theory to a severe and strict scrutiny, and accepts it as true to nature, to the extent that there are four true vertebræ in the skull, namely, the nasal, the frontal, the parietal, and the occipital.[2] From this point, he carries forward his investigations to the discussion of the homologies of all the parts of the skeleton, and exhibits the general truthfulness of Oken's first views, by a most masterly and minute comparison of the bones of a fish, a reptile, a bird, a quadruped, and of man. These discussions are deep and intricate; but, as we follow Owen through them, we feel how truly the presence of the thought of an ideal archetype is to him the true Ariadne thread by which he is guided in the midst of what, without this thought, must have been but a tangled maze. As the result of the comparison, a foundation has been laid for a grander and vaster generalisation. Anatomists, generally, had admitted the presence of bones in the skeletons of the lower animals having well-marked affinities with bones in that of man. Does there then exist some common type, according to which the skeletons of *all* the vertebrate animals have been formed?[3] And if so, what is the distinguishing feature of the common type, and what is the general rule or law according to which it is subordinated?

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[1] *Lehrbuch der Natur-philosophie.* Translated for the Ray Society.

[2] "Homologies, etc.," p. 132.

[3] Recent researches in embryology have shed light on this from another quarter. It is found that the embryos of existing species bear, at certain stages of their growth, resemblances to types which have now perished from the earth. Thus the embryos of existing osseous fishes exhibit phases of development which are found to have been persistent among the fishes of the Old Red Sandstone.

"Comparison," says Owen, "of the piscine skeleton with those of the higher animals, demonstrates that the natural arrangement of the parts of the endoskeleton is in a series of segments, succeeding each other in the axis of the body. These segments are not, indeed, composed of the same number of bones in any class, or throughout any individual animal. But certain parts of each segment do maintain such constancy in their existence, relation, position, and offices, as to enforce the conviction that they are homologous parts, both in the constituent series of the same individual skeleton, and throughout the series of vertebrate animals."—(P. 81.)

But more, must there not have been somewhere a great archetype, according to which the lowest of the vertebrata, equally with the highest, have been formed? Yes; it is illustrated in fish, reptile, bird, beast of the field, and in man. The plan of the house has been fully formed in the mind of the architect, before it is either realised in the actual building, or even expressed in rough outline on his board. Every step in the realisation is taken after the ideal exemplar, first formed in his own mind. There are strong inferential reasons in Scripture for supposing that it was thus in the Divine Mind as to the creation of man. As world was piled on world, and as the mighty ages glided past in their grand march up to Eden, the ideal exemplar obtained expression which increased in frequency as the time approached for the bringing in of the human race. "The recognition," remarks Owen, "of an ideal exemplar proves, that the knowledge of man must have existed before man appeared. For the Divine mind which planned the archetype, also foreknew all its modifications. The archetypal idea was manifested in the flesh, under divers modifications, upon this planet long prior to the existence of those animal species that actually exemplify it."

In conclusion, were we tempted to give, after the manner of many of our old authors, diagrammatic expression to our estimate of Owen's works, we would arrange their titles in the form of a pyramid, and hang a scroll over them all, bearing this legend:—THE TESTIMONY OF COMPARATIVE ANATOMY AND ZOOLOGY TO THE MANIFOLD WISDOM OF GOD.

ART. III.—*Remarks on Secular and Domestic Architecture, Present and Future.* By GEORGE GILBERT SCOTT, A.R.A. London: John Murray. 1857.

IN the book before us, Mr Scott, with an abundant show of originality, does, in reality, nothing more nor less than the very useful work of summing up the chief results of the last quarter of a century of architectural criticism. To persons well read in this department of literature, the way in which Mr Scott appropriates other men's thoughts, not only without a word of acknowledgment, but with all the airs of original genius, must be somewhat laughable. We confess that, to us, it is even irritating; for we may venture to take credit for having contributed not a few ideas to that mass of new truth which Mr Scott puts forth with such apparent confidence in his sole proprietorship. Compared, however, with Mr Ruskin, we have small cause to complain. Mr Scott has not only often adopted, without acknowledgment, Mr Ruskin's ideas, but also, as far as he was able, Mr Ruskin's style, even to its defects. We may say, indeed, that, for a mere epitomist like Mr Scott in the work before us, the greatest beauties of Mr Ruskin's style must become defects; for the style of a man enunciating for the first time important principles in art is naturally enthusiastic, and very excusably dogmatic. But who would not smile if he were to find a sober professional gentleman, in 1858, writing in some such manner as this?—"Rash as my readers may think me, and aware as I am that I lay myself open to the sneers of the sciolist, and the mockery of the matter-of-fact, I nevertheless fearlessly declare my conviction, formed after weighing the question well, that any two sides of a triangle will be invariably found to be greater than the third." But we fancy that there are others who have even more cause than Mr Ruskin to complain of Mr Scott's enthusiastic self-appropriation of architectural truth. We mean those who have written their new truth in brick and stone; men, like Mr Woodward and Mr Butterfield, who, without any flourish of trumpets, have raised works of enduring and novel beauty, such as the new Church in Margaret Street, London, and the new Debating Room of the Union at Oxford.

We would have it to be understood, that we object only to the manner of Mr Scott's book. The matter, inasmuch as it is a practical and popular digest of architectural principles, established, by various original thinkers and workers, during the last twenty years, is very useful indeed. This volume will much extend a true taste in architecture among the people, who, as a rule, never believe anything until they have been told it at least twice; and we willingly contribute all we can to its usefulness and popularity, by recommending it as a readable, and even entertaining summary, in a department of knowledge which ought to be interesting to everybody.

Other people besides Mr G. G. Scott "have for many years been strongly impressed with the following facts":—

> "First, that the vernacular domestic architecture of our day is wholly unworthy of our state of civilisation, and requires a thorough reformation. Secondly, that the attempts which have been made to effect this, whether by those who favour the Italian, Mediæval, or other styles, though often most praiseworthy, have been in the main unsuccessful. Thirdly, that the success, however incomplete, of the great movement by which pointed architecture has been revived for ecclesiastical purposes, though unquestionably the one great fact of our day, so far as architecture is concerned, has not hitherto had full scope for producing a corresponding effect upon our secular buildings. Fourthly, that this has been caused chiefly by two circumstances: the impression which, strange as it may be, is so prevalent, that Gothic architecture is essentially an ecclesiastical style, and that though eminently suited to churches, it is not fitted for other classes of buildings, and the consequent unnatural severance which has taken place within the last few years between ecclesiastical and secular architecture—a severance which has never existed at any former period; and, on the other hand, the want of a due appreciation of the question by many of the architects themselves, who have been engaged in this revival, which has led, in many cases, to an uncertainty and hesitation in their efforts when engaged in secular works. Fifthly, that a thoroughly erroneous impression prevails as to the principles on which the revival of pointed architecture is founded and carried on; that it is an antiquarian movement, and seeks to revive all that is ancient, instead of being, as is really the case, pre-eminently free, comprehensive, and practical; ready to adapt itself to every change in the habits of society, to embrace every new material or system of construction, and to adopt implicitly and naturally, and with hearty good-will, any invention or improvement, whether artistic, constructional, or directed to the increase of comfort and convenience."

Mr Scott arranges his work according to the order of the above "facts" or themes. He begins by making a forcible appeal to this effect:—"Are we, as Englishmen, satisfied with the state of domestic architecture amongst us, or ought we to be so? Our homes, of course, are comfortable and pleasant inside, but are they beautiful outside? Can we justly take a national pride in them, and point to them as indications of a high state of civilisation? Do they contrast satisfactorily with the houses of our forefathers, built in periods we are accustomed to think rude? Do our town houses add grandeur and picturesque effect to the streets of our cities? Do our country houses harmonise well with the scenery around them, and add beauty to the landscape? Then, again, how do we feel satisfied with the look of our country towns? How do we like the look of the cottages of our poor?" This series of questions is certainly embarrassing to our *amour propre.* Our forefathers, visibly, were wiser in some things than we are. They could not build a barn without making it beautiful and noble; whereas we cannot, even in our palaces, rise above the mean and repulsive. There is far more than "the melancholy graces of decay" in the charm of all architectural work of the twelfth, thirteenth, fourteenth, and fifteenth centuries. Age does not make a bad building beautiful, although it beautifies a good one. There is a real instinct of beauty, and, what is of even more importance, a manifestation of willingness to sacrifice lower considerations to the production of beauty, in all old work, which puts a most vital difference between it and ours. We do not, however, believe that this difference arises from any general degradation of feeling. We are surprised that a practical man like Mr Scott should not have set more importance than he does on some of the conditions under which most modern builders have to work. Some years ago we pointed out the fatal condition of *impermanence* which has long been imposed upon the domestic architecture of towns. We believe that the necessity under which builders in general have lain of building edifices of which the chief economic virtue is, that they shall not last beyond the term of the ground-lease—a term scarcely long enough, in general, for the mere seasoning of a well-built house—has been more ruinous to the national instinct for beauty in architecture than all other causes put together. In the arts which have escaped degradation from such external causes, it is not found that we have, upon the whole, degenerated. Music, which is more nearly allied to architecture than any other art, has advanced with astonishing rapidity from a state of artistic infancy to one of maturity, since the dying out of the best age of building. Poetry and painting have attained their highest triumphs during this period of architectural degradation. We must look, then, to some change of external conditions to explain a degeneracy which is clearly not that of our humanity; and where shall we find a better explanation than in the fact that, for reasons which need not here be investigated, people all over the civilised world have ceased to attach that idea of permanence, throughout successive generations, to their domiciles, which was at the foundation of the architecture of the best ages. No building, domestic or public, secular or sacred, can be architectural in its effect, unless it looks as if it were built to last for ever. This semblance of absolute permanence is not only a condition of the expression of architectural ideas, but it is itself the one great idea of which all kinds of architectures are the varied expressions. The Egyptian style, as this *Review* may claim the credit of having first proved, was the simplest of all possible expressions of this idea. The expression was produced by sheer mass assuming the form which nature's own architecture, in her mountains, takes. Everything in Egyptian architecture intensified, by multiplication and contrast, that form of passive and eternal resistance to gravitation and all ordinary destructive forces, the pyramid. Greek architecture diminished the brute mass, and abolished the passive force of the prevailing form of the edifices of Egypt, and substituted a far more beautiful and vital expression of the idea of permanence. Its masses, though still noble, were no longer rocks, lying heavily upon the earth, and carved into avenues of shafts and cliff-like towers. They became vital by being divided into two classes, which were opposed to each other with the most varied, powerful, and delicate expression of equilibrium. From the basement of the Greek temple sprang a series of shafts, of which the outline, multiplied by fluting, impressed the eye with a sense of a torrent of power rushing up to meet the gravitating mass of the entablature. The mass, and its supporting power, were each expressed with elaborate artistic science, and the different ways in which this was done gave rise to the different "orders." The Doric shaft had its expression intensified, first, by the three horizontal channels, which were cut in its thickness just below the capital, and which, by diminishing the supporting power *wantonly*, where it was most required, made a proud and most intelligible boast of superabundant ability for the task imposed; secondly, by allowing itself, after this display of ample power, to seem to suffer to a certain degree from the superimposed mass, under which it spread into the beautiful "quirked ovolo," that was crowned by the "abacus," or tile,—the point of rest and indifference between the opposing powers of support and gravitation. The Ionic shaft spoke the same thing in different words. Instead of channels diminishing its power, it was ornamented where it was weakest; and its power, on meeting the weight of the entablature, distributed itself into two streams, which rolled over in elastic curves. These, and other expressional powers in the shafts, were met by a similar declaration of opposing force in the entablature, of which we have no space here to describe the various interest, all combining in this one idea. Lombard architecture, again, relied for its architectural character upon a totally different mode of showing forth the same quality of power and permanence. Here the *wall* performed the offices of the *colonnade*, and endless devices were resorted to, whereby its thickness and might were artistically manifested. Finally, the architects of the pointed style, having discovered the mechanical principles upon which the greatest amount of permanence and security could be obtained with the smallest expenditure of material—*a discovery which rendered all previous styles for ever obsolete*—exhausted their powers of invention in elaborating that wonderful system of decoration which compensates, by the most brilliant vitality, for the absence of massiveness. The supporting members, in this style, having so little work to do that the display of it would not be imposing, are made to appear as if that task were altogether abolished, and the lines of the clustered shaft are continued in the arch, and lose themselves in the roof-ridge; and a thousand details of decoration, in base, capital, moulding, etc., help this effect. Thus we see that, in the four great architectures of the world, the main idea has always reference to mass, that is, to permanence,—in the first three positively and directly, in the last indirectly, *i.e.*, by the management of masses of moderate magnitude so as to avoid the impression of slightness and impermanence. We may fairly conclude, then, that whatever tends to destroy the connection, in men's minds, of absolute permanence with good building, tends also to destroy the habit of mind which is the ground of architectural feeling. Now it is certain that the world, for several generations, has been living in houses which neither are nor seem to be built for more than a very moderate "term." We live all our lives between walls so thin and high, that, but for the strong probability afforded by experience that they *will* last on from day to day, we would not venture to trust our lives to them for an hour. Accustomed as we thus are to behold, without disgust, the immense majority of our edifices raised, as it were, out of the pale of architectural principles, it is not surprising that our architectural instincts are so blunted and perverted, that, when we are called upon to build under conditions of permanence, we have no feeling for the work, and can only plagiarise, and spoil in the plagiarising, the works of our ancestors. Stupendous efforts have been made, during the last quarter of a century, to revive the lost art of architecture, and the success of those efforts has been much greater than any sober-minded man would have ventured to prophesy at the beginning of that time. Ecclesiastical architecture is wholly revolutionised. This movement, Mr Scott truly says, "is not a mere fashion, it is no popular caprice; it is a deep-seated, earnest, and energetic revolution in the human mind, and one which is not peculiar to our own country or our own church, but which, in a greater or less degree, pervades all the countries where Gothic architecture once flourished. It is a craving after the resumption of our national architecture, the only genuine exponent of the civilisation of the modern as distinguished from the ancient world. No town or village in England but supplies its testimony, in church or school-house, to the magnitude of this revolution. There remains, however, a great work before us,—our civil architecture is as yet unrevolutionised. We cannot, however, say that we are, in civil and domestic architecture, in precisely the same position in which we were, as concerns church architecture, fifteen years ago, for we have been all this time laying in stores of knowledge on the subject. We have put out our feelers. We have made many feeble and irresolute essays, not to mention many miserable failures. We have made our reconnaissances; but the real brunt of the attack is still to come. Let us gird on our harness for this new contest. It may seem at first sight hopeless; but let us look at what we have already achieved, and our courage need not fail us." We fear that Mr Scott is too sanguine of what may be done, and that he overrates, not the magnitude, but the vitality of what has already been effected. The "revolution," of which he speaks, began, as "revolutions" generally do, at the wrong end. Architecture, like charity, should have begun at home, if possible—which, unhappily, it was not: for social economics are stubborn things, and turn deaf ears to æsthetical persuasions. Landlords and building acts laugh at theories of beauty. It is in vain to talk and write about the possibilities of metropolitan architecture while the Duke of Bedford and the Marquis of Westminster stand aloof, like the Fates, and decree that the life of half the houses in London shall be ninety-nine years, and no more; it is in vain that we extol the picturesque gabled fronts of the dwellings of our ancestors, so long as the law declares that the party-walls of every house shall rise well above the adjacent roofs, thus providing that the *sides* and not the *centres* of our dwellings shall have the greatest altitude. We are sorry to damp the sanguine views of Mr Scott and the Gothic revivalists; but we fear it is certain that, so long as we live in houses built under such conditions, it is impossible that, as a nation, we should look upon architecture, even in its public and permanent works, in other than a dilletante and disbelieving spirit. A dilletante reformation, however, when it assumes the magnitude of the recent change in the principles of church building, is better than no reformation at all; and it is not quite impossible that such reformations may at last subdue the obstinate enemies of its vitality, and finally end where, as we said, it ought, if possible, to have commenced. One step has certainly been taken, which need not be retraced.

We have come at last really to understand the principles on which the mediæval architects built, and, if we can do no more, we can reproduce their conceptions without ridiculous blunders. This is more than we were able to do even so short a time ago as the date of the commencement of the New Houses of Parliament, which no architect of the present day would think of designing upon their actual plan; and not only do we understand those principles so as to carry them out in stone, but we also comprehend that their artistic and economic truth is such that no previous mode of architecture can pretend to rival the mediæval style, which, as we have said, has therefore rendered all ancient styles, and modern corruptions of ancient styles, for ever obsolete. Admirers of the Gothic styles can no longer be silenced by their opponents with a contemptuous *de gustibus non est disputandum!* Every person, with the architectural information of the present day, has the same right to laugh, not at the *bad taste*, but the *ignorance*, of a club of gentlemen, or an artistic commission, who resolve to choose the Greek or Palladian mode for their house or picture-gallery, that a school-boy would have to ridicule, in an otherwise well-informed man, the refusal to acknowledge the conclusiveness of the argument of the binomial theorem. In fact, when Mr Scott says, "Now I boldly assert that no style of architecture has so directly derived its characteristics from utility as that which I am advocating; that no style is capable of adding so much that is beautiful and pleasurable, not only without reducing, but as arising out of its uses, as this · and that no style is equally capable of adapting itself to varied requirements, or of enlisting in its service the inventions, materials, and ideas which are introduced by the advance of social improvement;" he "boldly asserts" a series of positions which have become mere truisms of architectural criticism.

Not only have other architectural critics—ourselves among the number—had a long start of Mr Scott's "bold assertions," but even architects have now for a good while been anticipating them in stone and brick. It is not the first time that the world has heard of Gothic architecture being as good for secular as for sacred purposes. The most conservative nation in the world has raised its legislative palace in this style; and in Deane and Woodward's New Museum at Oxford we have a still bolder adoption of it, in the very home and heart of conservatism of all kinds. In the latter building, to which little public attention has been called, and of which Mr Scott makes no more than a passing mention, Gothic architecture does far more than assert its secular efficacy, it takes a new stride as an art, and actually puts into practice various, new, and important ideas which appear as "bold assertions" in Mr Scott's book. In this edifice, and in the Debating Room of the Union, Oxford, certain decided but apparently incompatible superiorities of the Italian mediæval mode are vitally grafted upon our own national style; moreover iron and glass are being boldly, though it would be premature to say, successfully adopted, for purposes to which the mediæval architects never dreamed of applying them, namely, for the material of shaft, spandrel, buttress, and roof. In the metropolis, also, there has been no lack of boldness in applying Gothic architecture to secular purposes. Here and there, in the otherwise hideous streets of London, the passenger comes upon a new private house or shop, which, if it had been found in Venice, with the due adjuncts of decay, would have filled our architectural critics with enthusiasm. There is one such house in Park Lane, another in Southampton Street, Strand, a third in Buckingham Street, and a fourth in Little Russell Street, Covent Garden. We are afraid that we cannot reckon Mr Scott's new buildings in Dean's Yard, Westminster, as belonging to the best specimens of the revival of Gothic architecture for secular purposes which is now in process of initiation. Between the above extremes of Palaces and Museums on the one hand, and small houses in insignificant streets on the other, London can show several other examples of this commencing revival. The most successful of these is, to our thinking, the new edifice on the east side of Lincoln's Inn Fields. Here we have a very beautiful revival, not only of Gothic, but of English Gothic, or "Tudor." The new Record Office, in Fetter Lane, is a less imitative, but also less successful, adaptation of Gothic forms to modern and secular purposes. These examples are at all events enough to save Mr Scott from being charged with a wild and eccentric spirit of innovation, in such "bold assertions" as we have quoted above.

Let it be remarked, that the smallest of the buildings, which we have now instanced as examples of modern secular Gothic, is good for at least five hundred years; and that nothing can more conclusively demonstrate the truth of our assertion of the necessity of the appearance of indefinite permanence in an architectural work, than the disgustingly unarchitectural effect of houses, such as many on Tulse Hill, and in other suburbs of London, in which Gothic and Lombard forms are made use of in houses built on the warranted-to-fall-down-in-ninety-nine years principle. These houses, which are of honest materials, not mere compo, which used a short time ago to be the material of all ninety-nine year architecture, are, in fact, worse perversions of architectural truth than the simple plaster deceptions, just as a self-deceiving sophist is worse than a direct and ingenuous liar. The latter outrages truth, but does not discredit it in the minds of others; but the former injures in the minds of the weak, who are the great majority, the instinct of reality. The proper style of architecture for the ninety-nine year house, is that which was universal under the ninety-nine year system until the architectural mania (which began about forty years ago, and is now at its height) reached the London trades' people, who, when they do go mad,—and that is always when they hearken while the "demon whispers, 'have a taste,'"—go mad to a degree unknown among less business-like people. We allude to the style in which the great mass of London is built. This style is perfectly honest, and, as far as it goes, artistical. It is a true symbolical representation of the central idea. Just as "for ever" seems written on the face of every building of antiquity, so, upon the faces of the five hundred miles of flat, undecorated, baked-mud streets of London, is written, "for ninety-nine years." It was a bad thing when London streets first took to lying, and the thin walls of bilious-looking bricks hid themselves in plaster coverings of Greek and Palladian pretensions. But this falseness is quite shallow and excusable, when compared with that in which real materials assume forms whereof the main significance is an idea of duration totally at variance with the actual fact.

We fancy that there are already symptoms of a revulsion in architectural matters; so much of the vilest profanation of architectural truth and beauty meets us at every turn, that our taste for the truth and beauty themselves is in danger of being converted into indifference, if not disgust. We confess ourselves then, on the whole, unhopeful of a revival which seems to have so little heart in it. We fear that it will not have the strength to bring about those modifications of social habits and laws which are absolutely necessary to its extensive prevalence. In ecclesiastical architecture, by reason, not, as Mr Scott supposes, of its sacred nature, but of the permanent character of all ecclesiastical edifices, a total revolution has indeed been effected. But the revolution is only in the architecture—not in what is of far more importance, the national feeling. After a deal of writing, and talking, and money-spending, we have got our fine new toy, indeed; but who cares much about it? Had it been possible to have begun our reform at the right point, and to have so built the houses we live in that the mere living in them should have educated our tastes, and endowed us with an unconscious perception and love of architectonic reality, we might then have built Churches, Palaces, and Houses of Parliament in which the heart of the nation would have delighted. As it is, it seems quite clear that the nation does not care a straw for what it talks, and writes, and spends so much money upon. We should like to know what per-centage of Londoners, or visitors to London, have ever gone a hundred yards out of their way to see a series of the noblest architectural views in the world,—views which they have paid millions of money in taxes to create,—we mean the views of the different parts of the Houses of Parliament, which are to be obtained only in the never-visited interior courts of that wonderful edifice.

We will, however, for the time being, hope against hope, and so proceed with our review of Mr Scott's summary of the chief considerations by which we should be guided in prosecuting the Gothic revival in "secular and domestic architecture."

The window is justly made the first of the claims of Gothic architecture to adoption for domestic purposes. "Gothic architecture," says Mr Scott, "as might be expected from its northern origin, is *par eminence* a *window* style; so much so, that by its windows we most readily distinguish it from other styles, and by them we define its different historical changes. In the pure Greek the window comes in only as a thing to be ashamed of, and the means of lighting the finest Greek temples are still a mystery. In Roman buildings it assumes a more definite position, but still seems rather admitted as a necessary intruder than a legitimate part of the architecture. It is in the middle ages that the window first takes its proper position as one of the most essential architectural features, and as the most important vehicle for architectural decoration." In this passage, Mr Scott does not state the case in its full force. The fact is that, whereas in Greek architecture and all its derivative branches, and in Lombard architecture, the wall is an artistic necessity of the first order,—in the Greek, as a passive foil to the expression of ascendant energy in the shafts,—and in the Lombard, as being itself the main object of attention and decoration, it exists, in the Pointed style, only on sufferance, and as an occasional, but only occasional necessity. In those buildings in which this style approaches nearest to its ideal perfection, such as the Cathedrals of Cologne and Strasburg, the wall is almost wholly dissolved into windows. The capacity of pointed architecture for the admission of light, as compared with that of the rival style of the Italian Renaissance, may be sufficiently understood by our readers, if they will recall the secular Gothic edifices at present in the metropolis, and particularly Christ's Hospital and the New Record Office. It will be remembered that, in these buildings, almost the entire space between buttress and buttress is *window*. The nearer a Gothic building comes to being wholly made up of buttress and traceried window the better, the more Gothic it looks. But turn to the best metropolitan edifices in the rival style; look at the range of classic club-houses in Pall Mall. Why does the Reform Club strike us as being so much more beautiful and in character with its style than the rest? Chiefly, because less of the wall is sacrificed to windows than in any other of these buildings. The absurdity of building museums, picture-galleries, and other places of exhibition, in the Greek style, or in any of its derivatives, seems, in the face of this clear and undeniable principle, to be too glaring to require enforcement.

Mr Scott's discussion of the question as to whether a Gothic window is bound to be pointed, seems to us to be the most satisfactory part of his book, and that part in which he has most shown independent thought. There are two architectural parties; one of which is for trusting entirely to constructional convenience as the source of architectural character, the other maintains that there are certain typical forms which must be adhered to, for the form's sake, or we fail in the production of homogeneous beauty. "There are two normal modes of covering an opening, the one by a horizontal lintel or architrave, the other by an arch." (Mr Scott might more properly have said that there are three; for the pointed arch differs, in constructive qualities, almost as much from the round-headed arch as this does from the lintel.) "Now one set of theorists insists on having only lintels, or only round arches, or only pointed arches, while another is for using them all according to convenience." We heartily agree in Mr Scott's decision as thus expressed:—

> "The last is the theory dictated by common sense, the first by pedantry; yet we must so far temper the latitude given by the one as to prevent its introducing positive discord. It is quite true that the forms which satisfy the obvious demands of construction are, so far as this is evident, satisfactory to the instinct of common sense, and may even pass for beauties, but they have no *necessary* connection with beauty, or harmony of form, though, by a happy coincidence, they often suggest what is agreeable to the eye. The common-sense theory then, must be tempered, when found needful, by the principle of harmony and good taste: thus, in a lintel style, the arch should be an exception, used only from obvious necessity; and in an arch style, the lintel should be sparingly used, and in positions in which an arch would obviously be needless. Again, in a building in which the round arch predominates, other forms should only come in as the result of practical considerations; and in a building where the pointed arch is the leading type, the round or other forms of arch may be admitted freely, but never without a practical reason. I claim, then, for Gothic architecture the liberty to use the arch or lintel as circumstances may dictate, but reserving fully a preference, *cœteris paribus*, for the arch; and, in the same manner, I claim for it the free choice of the different forms of arch, as may be best suited for each particular position, but urge, at the same time, a general preference for the pointed arch."

The next question discussed by Mr Scott is, "whether a

Gothic domestic window must of necessity be mullioned." Here again he claims the same kind of freedom. "The mullioned window seems to have been nearly universal in English domestic works, but abroad the mullion was omitted whenever convenience suggested its absence. This is all I claim in our own works." Mr Scott does not give any opinion as to the reason of the highly characteristic prevalence of the mullioned window in England, and its less frequent use abroad. We have no doubt that the reason is to be found in the motive our climate gives us for building lower rooms than are common in continental houses. A room must be very lofty to allow of a *large* window having a pointed arch. To our minds, by far the most beautiful window for domestic purposes is that which is composed of lintel and mullions inclosing small pointed arches. Whatever Mr Scott may say to the contrary, there is a certain solemnity and "ecclesiastical" character in the form of the pointed arch, which unfits it for prevailing use in a secular, or, at least, in a domestic building, unless its peculiar character is neutralised by inclosure in a square head. Above all things, we would caution our architects, who are in danger of going to fanatical extremes in their admiration of "Italian Gothic," to avoid the hideous windows of the over-praised Doge's palace, and other mediæval works of Italy. A window of anything like their breadth, whether square-headed or pointed, is frightful to look at, unless it is divided by mullions.

"In many modern buildings in Germany the wood casements are so arranged as to give quite the effect of a mullioned window when shut, but to leave the space undivided when open, while the upper part is often filled with ornamental work of metal or other material. This system might be very readily adapted to a Gothic window, where needful." Here we must entirely disagree with Mr Scott. The reason why a mullioned window is better than a great broad gap, is simply because the mullion has the reality as well as the appearance of being a portion of the power of the wall, left, in the construction of the aperture, in order to secure the upper wall against falling in. Now there is such an uncompromising *sincerity* about all good architecture, that, to a well-educated architectural eye, the ugly gap is far better than "wood casements so arranged as to give quite the effect of a mullioned window, *when shut*." This passage is one of several proofs given by Mr Scott, that, for all his apparently enthusiastic adoption of the right architectural doctrines of Mr Ruskin and others, he has not that love of artistic truth which is the foundation of artistic genius.

On the subject of glazing we quite agree with what Mr Scott says:—"For the glazing, it seems to me that if we condemn the old system of diamonds, or small-pattern glazing, as inconsistent with the spirit" (say rather with the mechanical resources) "of our age, and our praiseworthy desire to see clearly out of our windows, we ought, in good houses, to go at once into the opposite extreme of plate-glass, as undivided as possible. It is one of the most useful and beautiful inventions of our day, and eminently calculated to give cheerfulness to our houses." What "seems to" Mr Scott to be the best course in this matter, has also seemed to be the same thing to various other architects, who have plagiarised this writer's principles by anticipation. Mr Woodward, in particular, has proved how well plate-glass suits pointed architecture by his use of it in Dr Acland's house and the Union Room at Oxford. In connection with this subject we would throw out a practical caution. A condition of the successful use of plate-glass in pointed architecture will generally be found to be this, that the mullion, instead of being less pronounced in character than under the old condition of diamond glazing, ought to be very perceptibly more so, in order to counteract the increased effect of vacancy. Unmullioned spaces, which looked well enough where the glazing was rendered fully visible by means of the minute, lead-bound panes, would often be ruinous to architectural effect were these spaces to be simply filled up with plate-glass, which must be regarded as a practically invisible medium. This for two reasons:—first, the ancient glazing had itself the effect, through the operation of the numerous diagonal lines, of in some degree resisting lateral and superincumbent pressure; and, secondly, the eye dwelt upon spaces so glazed with a certain amount of satisfaction and interest. Now, in order to compensate for this fact of visibility and this appearance of resistance, when plate-glass is used we must have the mullions more powerful and interesting. They should be thicker, closer together, and more highly decorated, as a rule, than in ancient buildings. We consider this suggestion of importance, because the present tendency of architects seems to be in the other direction. Our improved mechanical resources enable us to widen the apertures in our buildings without diminishing the security of the wall. But architects should not forget that, although architecture must never express a falsehood—as in the window frames which look like mullions "when shut"—it ought very often to give to truth an emphasis beyond the bare requirements of construction.

Mr Scott very properly pleads for the retention of the old system of glazing in windows, or parts of windows, which are intended only to admit light, and not to be seen through—as in stair-case windows, and in the upper portions of other windows.

We do not sympathise with him, however, in his advocacy of balconies. They seem to us to be essentially un-Gothic in character, unless they rest upon open arcades. We do not remember to have seen any successful example of a Gothic balcony projecting from the wall, as most balconies necessarily must. In our climate, moreover, they are of so little use, that it is not at all worth while damaging the Gothic character in order to obtain them. In Italy and Spain the case was different, and so, indeed, was the character of the architecture, which, beautiful as it must be allowed to be, was, after all, a sort of bastard Gothic, and admitted of various licenses quite inconsistent with the noble simplicity of our northern styles. These, we hope and trust, will never be Italianised to the degree threatened by the extravagant admiration which has succeeded to our former unjust contempt for southern Gothic. Several years ago (Vol. xv., pp. 481–485), and before architects had begun to copy the Italian Pointed style, we expressed a decided opinion as to the real value of that mode for our purposes. "Mr Ruskin," we wrote, "endeavours to prove that this style, as displayed in the Venetian palaces, especially the Palazzo Ducale, is the culminating point of the art of architecture. And he is perhaps right, as far as regards metropolitan palatial architecture, but, we think, no further. . . . . In Venetian architecture we have the Lombard principle, which is to make everything of the wall, and the Pointed, which *tends* to make nothing of it, beautifully combined and reconciled; and a very decided mixture of the fantastical Arabian notion of throwing gravity and the law of gravitation overboard altogether (as the basis of architectural expression), confers upon this style a light-hearted and smiling air, which is most delightful in its place and way." These qualities, we remarked, unfitted this style for church architecture: but the plain façade and the arcade which is common on the ground storey, render it particularly suitable for street, and, above all, for *shop* architecture. We regret to observe that, since this was written, architects have been applying the Italian style chiefly to purposes for which we have a far better style of our own, and neglecting to apply it where it would be appropriate.

On the subject of roofs Mr Scott makes the following sensible remarks:—

> "The fact that in Italy the roofs of mediæval buildings were generally low, I am, I confess, rather disposed to attribute to classic traditions than the direct effect of climate. My own experience of Italy would not lead me to predicate of it any want of necessity for efficient roofing. In my first night under an Italian roof, I was nearly flooded out of my bedroom by the torrents of rain which the low covering failed to exclude; while, on the last evening of my stay, I was ankle-deep in snow at a railway station in the plains of Lom-

bardy, and that after only half an hour's fall, and in the very beginning of November. Nor do my reminiscences of the furious swellings of the Arno, or of roads converted into rugged and deeply-furrowed water-courses, and in parts nearly washed away by three days' rain, impress me with the necessity of a good slope to your roof being much *less* in Italy than in England."

We are glad to have this indirect confirmation of our conviction—expressed long ago, if we remember rightly, in this *Review*—that the roof-pitch, in Gothic architecture, was a primarily artistic and not an utilitarian feature.

Mr Scott does the cause of Gothic architecture good service by emphatically insisting on its superior freedom. He shows "that the rules of the style are not so rigid as to demand the use in every case of all its normal characteristics; that, though an *arch* style, it freely admits of the trabeated construction; and that, though it delights in the *pointed* arch, it permits the use of the round or the segment; that, though the mullioned window is one of its most characteristic features, it admits of undivided openings, and that it allows great latitude, not only in the design of the window itself, which may be of all varieties, from the square opening to the arched and traceried window, but also in the minor accessories, such as the glazing and the mode of opening the lights; and, finally, that though it delights in the high-pitched roof, as that best according with the sentiment of the style, it admits, as occasion serves, of every form of roof, from the perfect flat upwards. Gothic architecture is, in fact, the most free and unfettered of all styles. It embraces every reasonable system of practical construction. This, however, is only true up to a certain point, and Mr Scott entirely omits to show where that point is; nay, we think it perfectly clear, from his book, that he has no very distinct notion about it himself. The essence of the artistic character of Gothic architecture, as distinguished from the artistic characters of other styles, is its "*perpendicularity*"—a term which has been very much abused and misunderstood, but which, nevertheless, expresses the matter as nearly, perhaps, as one word can. This character depends primarily upon the fact that the pointed arch is, and looks like what it is, a *self-supporting* arch, which the round arch is not. This constructive quality determined the immense height of the naves of Gothic churches, and an entire system of decorative features, including the spire, to harmonise therewith. In Greek, Roman, and Renaissance architecture, the shaft, and, in Byzantine, the round arch, assumed huge masses of superincumbent entablature and wall as the objects of their real and artistically expressed supporting powers. But, in the purest Gothic, as we were the first, in a former article, to prove, the idea of support is abolished as an artistic character, and, in its stead, we have that of interminable aspiration, or "perpendicularity." Now, Gothic architecture is not quite so free as Mr Scott believes; it does not admit of balconies, as he conceives that it does, nor of heavily projecting cornices, nor of any other feature involving an unavoidable display of supporting power. Gothic clustered shafts, as we all know, do really support great weights, but their artistic expression is most elaborately and successfully managed so as to convey the notion that they rise as freely as the mounting spray of a fountain. So with buttresses; they spring from stage to stage, and terminate in airy crocketed pinnacles, ignoring wholly, in their artistic effect, the fact of the work done by them. This expression, then, of aspiration, unchecked from base to roof-ridge, is *the* Gothic expression: and, unless a building, whether secular or ecclesiastical. has a sufficient number of distinctly Gothic features—all of which, as we showed on a former occasion, aid in this expression—to convey to the mind of the beholder this peculiar effect, *it is not Gothic.* It seems to us that, in the Venetian palaces, this expression is reduced to the very lowest point consistent with the retention of Gothic character; and, if we have recommended them as examples for metropolitan architects, it is only because the conditions of modern street architecture are usually such as to preclude some of the noblest features of our native style.

The use and abuse of plaster, in architecture, is very ably and conclusively discussed in the volume before us. "It is a natural reaction," says Mr Scott, "when we find that a material, or mode of workmanship, has become debased by misuse, to treat it as *immedicabile vulnus*, and to proscribe its use altogether; and I believe that in many cases it is by far the safest mode of dealing with those materials, etc., which have become the vernacular vehicles for sham and deception. The legitimate use of a plaster material too often serves as an excuse for its base misuse, so that it may be safest to expunge it for a time from our *materia architectonica.*" It is, however, almost impossible to dispense with plaster entirely, and it therefore becomes important to define its use, which, in an artistic point of view, is generally to provide a basis for, or even itself to constitute, shallow surface decoration. "Plaster may fairly encrust a wall, or an arch, or a ceiling, because it does but hide what we know to be there; but if we so plaster over a horizontal brick arch as to make it look like a massive stone lintel, or if we use corbels and brackets as if to carry weight, while in fact they are but stuck up against a wall, we demean our art to a mere pretence." Buildings of the Elizabethan period afford beautiful examples of a legitimate use of plaster, as the material of shallow arabesque patterns. Mr Scott very properly observes, "Had the idea" (of plaster decoration) "occurred at an earlier period, we should probably have had ceilings in the pointed styles diapered over in low relief. . . . . It is *our* place to supply the deficiency." This is certainly a valuable suggestion. Ceilings are the last things which modern builders succeed in decorating rightly, and yet an undecorated ceiling is intolerable. A simple Gothic diaper would be beautiful in all ceilings, even in houses making no general pretension to Gothic or otherwise architectural character. Plaster cornices, connecting wall and ceiling, are right if they are very shallow, not else.

Mr Scott discusses the several parts of a house, as subjects of Gothic treatment; but we cannot say that he often throws much light on the matter. The following censure of much modern polychromy is, however, very just and opportune:—

> "Having so long discarded coloured decorations, excepting in a very small minority of our buildings, few amongst us have any knowledge of its principles, or, which is far more important, any eye for harmonious colouring; nor, in many cases, do even those who so loudly cry out for polychromy perceive very correctly the difference between good and bad decorations. For my own part, I think the majority of what is done is utterly disgusting, and infinitely worse than the Quaker drab which it supplanted. Surely the advocates of colour do not imagine that it imparts beauty irrespectively of the artistic skill with which it is applied! Bad designs or bad carving are offensive enough; but bad colouring is utterly detestable."

Of all people in the world, it seems to us that the "scientific" colourists, with Mr Owen Jones at their head, come most within the scope of the above reprobation. They justify Mr Ruskin's sarcastical recommendations to a young colourist, to learn carefully what colours are considered by them to be discordant, and to put those together as often as possible, if he would colour beautifully.

Mr Scott rightly says, that "the mode of painting the ordinary woodwork of a room in a Gothic house is one of the most puzzling questions one has to deal with." Where handsome woods are used, they should, of course, be left unpainted; but in common houses—and there is no reason why common houses should not be architecturally treated—deal must generally be much used. In an otherwise beautiful private room, by Mr Woodward, we have seen the principle of architectural sincerity carried out so far as to leave the deal woodwork bare. We confess the effect was not pleasant to us. The shade of this wood is too light, and what colour it has is not good. Moreover, there is a feeling that a touch will soil it, and the chance pressure of a finger-nail damage its surface. We must therefore conclude that deal ought always to be painted. To paint one wood in imitation of another is clearly contrary to severe architectural principle—though, if we remember rightly, Mr Ruskin somewhere defends, or at least excuses, this plan. Staining does not seem to us to be any better, though Mr Scott sees no objection to it. Indeed, it seems rather to be a worse kind of deception than imitative painting, because it is more likely to be successful. Deal stained of the colour of rosewood looks much more like rosewood than maple-painted deal looks like maple. Mr Scott suggests what we think the right alternative:—"There is no reason why a door should be painted in plain colour: why should it not be picked out in different tints, its mouldings touched in with richer colours, and its panels decorated with delicately-designed enrichment, in simple lines and flat painting? This would cost no more than graining." Another point of almost first-rate importance in domestic architecture, is the papering of rooms. It is very rarely that good patterns are met with. We had lately occasion to choose one, and found that the proportion of patterns having a good decorative character, to those which were out of the question for an apartment to be somewhat carefully "got up," was about one in three hundred; and this was at a fashionable London upholsterer's! Those of our readers who may happen to be re-papering and painting their houses at this season, will find some valuable principles simply stated in the following passage:—

> "I quite agree with Mr Owen Jones as to the desirableness of keeping our patterns flat. I think, however, that this principle is in danger of being over-stated. It is like the controversy on the same question as applied to stained glass,—one party deprecating the use of any shading whatever, while another repudiates the restriction with all scorn, and luxuriates in pictures with landscape backgrounds, and figures in their native rotundity. The true theory would appear to be this,—that, in decorating a part of a building that is in any degree functional, we should not disturb its surface by such an amount of relief, real or suggestive, as would appear to clash with its constructional requirements. Thus a floor is essentially flat; and it is manifest that its decoration should not make it appear otherwise. A vaulted surface, such as the interior of a dome, or the panels between the ribs of groining, ought not to be so boldly decorated as to disturb their essential form. The glass of a window possesses this quality in a less degree; but, as one object in decorating it is to prevent its being a mere gap in the architecture, and to make it a bond of unity between the sides of the opening, it should not, in my opinion, be made into a picture, giving the effect of great differences of distance, though moderate pictorial relief is allowable. In the same way with a wall: its functional quality *as a wall* should not be disturbed; and

therefore its decorations should generally be flat; but on borders, or detached panels cut out from the general surface, greater relief is allowable in the objects represented. On the whole, however, I think that even paintings of the highest order, executed on the walls of a building, should have less varieties of distance, and should have a somewhat flatter treatment than is customary in detached pictures. The fact of their being painted directly on the wall so far unites them with the architecture as to claim of them a certain degree of subordination to it,—a claim, however, stronger or less imperative, in proportion as they cover a greater or less space; for, if the painting be large, it is more essentially a part of the wall, and if small, it may almost be viewed as having a separate existence, like an ordinary framed picture. If the papering, or the painted decoration of a room, be arranged in panels, the degree of flatness in the patterns of the borders and the panels should vary reciprocally. That is to say, that if the panel contains fresco, or other painting, as in the early Italian decorations, the border should be hard and architectural, and any foliage in it should be flat; but, if the panel be filled with a uniform flat diaper, greater relief is admissible in the border, so that one or the other may supply the rigidity of character essential to a wall."

Mr Scott very justly attributes the triviality of subject and style, in modern painting, to the modern disconnection of the intimately related arts of painting and architecture. He and most of our readers are probably not aware that, at this moment, a very remarkable attempt at the restoration of the connection of the two arts is being made at Oxford. We have already alluded, in terms of admiration, to the new Debating Room of the Union. This building is one of the most beautiful and original of modern applications of Gothic architecture to secular purposes; and, on its interior walls, some of the greatest painters in England have been for several months past engaged upon a series of paintings in distemper, which are wholly unlike, and, as to style, in our opinion, far superior to anything hitherto done in the way of architectural painting. Mr D. G. Rossetti, whose ordinary refusal to exhibit his works publicly has prevented him from being generally known as probably the finest colourist and the most thoughtful composer living, is engaged, in company with Mr Arthur Hughes and other disciples of the "Pre-Raphaelite School," in covering the walls of the apartment in question with a series of colossal paintings, on subjects drawn from the legends of King Arthur and the Knights of the Round Table. From all that we have seen and heard of this work, it seems to have been undertaken and carried on in a spirit of union and enthusiasm, without any parallel in the works of artists of modern times. The work, we understand, is being done entirely gratuitously, the painters and the architect not having so much as stipulated for the payment of their actual outlay in colours and scaffolding, which must have been very large. The result, as far as we can judge from the paintings in their unfinished state, will be worthy of the spirit in which the undertaking has been pursued. We find it difficult to express, to the great majority of our readers, to whom Mr Rossetti can be little more than a celebrated name, how very original and effective, as *architectural* painting, this series of pictures promises to be—we may say, indeed, already is; for several of the ten bays of the building are at present completely painted. In the only journal in which we have seen these paintings spoken of at all in detail and with the respect they merit, namely, in the *Saturday Review*, attention is directed to the peculiar novelties of style and colouring by which these pictures are adapted to architecture in quite an unprecedented degree. Architectural painting has hitherto imitated, and, as it were, continued the architectural effects of the buildings in which they have been executed. Hard outlines, sombre colours, figures in statuesque postures and groups, have been provided, in order to "harmonise" with the architecture, the artists having forgotten that dissimilar things can only "harmonise" by contrast. Now, Mr Rossetti and his brother artists and disciples have dared to do exactly the right thing. The colours of their pictures are as dazzlingly bright as those of the most brilliantly illuminated missal; but, though their hues are as showy as those of a garden in May, they are also as subtly mixed and as soft. There are no hard outlines, no statuesque effects; and the result is, to our minds, as lovely as anything in modern art. The architecture and the painting, instead of being "harmonised," according to the vulgar notions of harmony, are in the most powerful and mutually relieving contrast. Nevertheless, the painting is thoroughly "decorative," and unlike ordinary canvas pictures. If we were called upon to describe, by one word, the nature of that much misunderstood quality of being "decorative," we would say, it is *distinctness*—distinctness far more pronounced than is demanded in the details of a work which subsists independently and entirely for its own sake, and which is therefore not "decorative," in the proper sense of the term. If we may so express ourselves, all the details of "decorative" painting or sculpture ought to be capable of being seen without being looked at. It is so with these paintings. The Pre-Raphaelites have been widely abused for their extraordinary attention to minutiæ; but it is a great presumption in favour of their knowing what they are about, in making this a leading quality of their canvas paintings or water-colour drawings, that they immediately abandon it on coming to "decorative" painting, and elaborate nothing but the colour, which never can be enough elaborated. In order to secure the absolute distinctness of every object, these paintings are so managed that all the interest centres in the foreground. We recommend those of our readers who may have an opportunity of seeing these pictures, to notice particularly, as examples of what we mean by "decorative" character, the sun-flowers in Mr Morris's picture of Sir Palomides' jealousy, the clouds in Mr Prinsep's subject of Sir Peleas and Ettarde, and the boat and waves in the Death of Arthur. There is some prospect, we believe, of this experiment in architectural painting being repeated (we hope by the same artists) on a more extensive scale in the New Museum at Oxford. We trust that we owe our readers no apology for having stepped a little out of our way to mention a series of works which, in all probability, will initiate a new style of architectural decoration.

If Mr Scott will take a run down to Oxford, he will find that all the suggestions in his "Query" about colour, pp. 84–86, have been adopted, by anticipation, in the paintings above noticed.

We come now to consider "constructive polychromy;" that is, the use of marble or bricks of different colours in the same edifice. In our opinion, the most ambitious of our attempts in this way have been the least successful. Our native stones and marbles want variety and depth of colour, and our native sky is not bright enough to bring out colours, otherwise weak, as an Italian sun does. If we are not content with plain stone of one colour, we must have recourse, for *effective* "constructive polychromy," to bricks. But coloured bricks are very difficult things to handle well; and English builders cannot do better than reflect upon Mr Scott's remarks on the cause of the difference between "an ugly red brick house" and "a fine old red brick house." "It is not that in one case the colour is crude and new, and in the other tempered by age, for the ugly brick house is often fifty years older than the one we admire; nor can we quite truthfully say, that it is the harmony of the material with Gothic architecture which pleases us, for we cannot fairly withhold a due meed of admiration for many red brick structures of Sir Christopher Wren; and there are many (?) other styles in which it has been used with excellent effect. Where, then, does the secret lie? I would answer, on the very surface, and in the obvious fact, that no material looks well if not skilfully and artistically used. This, however, seems especially the case with brick. A material of a quiet, inoffensive colour, like stone, does not look so ill when unskilfully used. If rough, there is a picturesqueness about it which is pleasing; if smooth, it gives the idea of care and good workmanship, with some suggestion of costliness. Rich marbles, again, have an intrinsic beauty, quite apart from their form; but brick has none of these qualities. It has not a mild, harmless colour; it has neither a picturesque roughness, nor a finished smoothness of surface; and though its colour may be rich, it is not in itself beautiful, like the varied hues of marbles. It depends for its good looks, therefore, more than most materials do, on the skill with which it is used; and, in the absence of such skill, its colour is too strong and obtrusive to permit it to be harmless." Mr Scott very justly remarks, that the shape of a brick is a very important element of its architectural effect. Our bricks, of which the size and shape, until very lately, have been exactly fixed by Act of Parliament, are too short and thick. The Roman brick was about double the length and half the thickness of ours. The superior artistic character of bricks so shaped, is chiefly owing to the constructive fact, easily apprehended by the eye, that their length ensures good binding.

Mr Scott's chapter on "New Materials" is not very conclusive. This subject is one of the highest importance; but perhaps we are scarcely, as yet, in a condition to say anything very conclusive about it. The constructive qualities of iron and glass are so valuable, that all artistic considerations, which stand in the way of their use, will infallibly be over-ridden—whether with the result of the abolition of architecture as a fine art, or with that of the development of a totally new style, it is impossible to foresee; but certainly what has hitherto been done leads us to forebode that the first result is the more probable of the two. Suspension bridges are generally pleasing objects; but their beauty is precisely that of a well proved geometrical theorem, and is the very reverse of architecture as a *fine* art. All fine art appeals primarily to the imagination; but a suspension bridge appeals to a faculty which is usually found in greatest vigour where imagination is weakest. Moreover, iron, quite as often as not, takes a form which has not even this low merit of mechanical beauty. Perhaps the very ugliest thing in or out of nature is a great tubular bridge. There is something, artistically, very terrible in the thought of this "iron fate" presiding over the works of man, and making them beautiful or hideous, with a dreadful indifference to our human susceptibilities. Mr Scott does not seem to comprehend the danger hanging over him and his art. The champion of Gothic architecture, he contents himself with showing, or rather endeavouring to show, that iron can be adopted in the pointed style, at least as easily as into any other. This may be true; but it seems to us that the one constructive property of iron, which may possibly be developed into architectural character, is a quality which is subversive of the principles of all the three fundamental styles hitherto developed, namely, the trabeated style, including Greek and its derivative architectures; the round arch and wall style, including Byzantine, "Lombard," "Norman," etc.; and the pointed arch style: but, more particularly, that quality seems to be subversive of the latter. The property we mean is that of projection in a horizontal direction from a perpendicular support on only one side. We do not see how this property could be developed into any style which would deserve a more dignified name than "the balcony style;" but still the fact that the great constructive peculiarity of iron tends obviously to the formation of such a style, is enough to convince our readers, if they recall what we said, a few pages back, about Gothic architecture and balconies, that iron promises to be rather the enemy than the ally of the pointed style. Another most significant fact, which Mr Scott fails to notice, is, that iron is so hard as to exclude not only sculpture, but all hand decorations, which would be effective at any distance from the eye. Now, let our readers consider what any style of architecture would be, in the total absence of sculpture, and they will see that this material would be absolutely fatal in any case. Sculpture is not a mere accessory of architecture. It is of the essence of all architecture hitherto developed, except the Doric, which, however, would not be pleasing, could we look upon it with the consciousness of the fact that all its shafts and capitals, and all the members of the entablature, were *hollow*, as they must be, in iron. We confess, indeed, that we do not see how any properly architectural effect is possible in iron, except that most important of all architectural effects, magnitude. A vast edifice is always architecturally imposing, and no edifice can be architecturally effective, unless it has this fundamental quality of size. A Gothic spire, which has never yet risen above five hundred feet in stone, might easily attain a thousand, in iron; and such magnitude would go far to compensate for the meanness of moulded, instead of sculptured crockets and finials. We conclude, then, that, although "metallic construction is the great development of our age," in the matter of architecture, it does not speak so ill, as Mr Scott would have it, "for the taste of our architects, that they have done so little to render it beautiful." Iron architecture is like the unmanageable mechanical man of Frankenstein; and we do not think it astonishing that, now that our architects have "developed" him, they are at a loss to know what to do with him, or rather how to prevent his destroying them!

Mr Scott's next chapter is on "Buildings in the Country." It is a somewhat vexatious chapter, containing, as it does, profuse illustrations of a very curious fact, which we have observed, namely, that no writings on architecture are so unpractical as æsthetic treatises on architecture by practical and professional architects. These gentlemen are ordinarily so much absorbed in the merest mechanical considerations involved in building, that when they come to anything like a general consideration of architectural beauty, they are easily distanced by their non-professional critics, who have only studied the mechanism of architecture enough to secure them against blunders in their artistical views. Let us give our readers a sample or two of Mr Scott's style, when he undertakes to promulgate rules of abstract beauty. We imagine that very few of the persons who are appealed to by Mr Scott's book, are likely to derive much information from the following architectural directions for "the ordinary villa:"—

> "Its characteristics should be quiet cheerfulness and unpretending comfort; it should, both within and without, be the very embodiment of innocent and simple enjoyment. No foolish affectation of rusticity, but the reality of everything which tends to the appreciation of country pleasures in their more refined form. The external design should so unite itself with the natural objects around, that they should appear necessary to one another, and that neither could be very different without the other suffering. The architecture should be quiet and simple, the material that most suited to the neighbourhood —neither too formal nor highly finished, nor yet too rustic. The interior should partake of the same general feeling. • It should bear no resemblance to the formality of a town house; the rooms should be moderate in height, and not too rigidly regular in form; . . . some of the windows should, if it suits the position, open out upon the garden, or into conservatories," etc., etc.

Surely no ghost, or great practical architect, was needed to tell us all this, and much more of the like! We have seen the same thing much better done by a common newspaper critic, who, describing a Gothic country house, says:—

> "It expresses in the liveliest manner the feelings of English comfort and English independence. The glowing brick-work, set off by slips and cornices of cold stone ashlar, bids defiance to the winter's gloom, and reminds us of the merry hearth, about which the whole edifice looks as if it had gradually agglomerated by a process of crystallization. The chimnies are conspicuous objects, as they should be, where the hearth is of so much consequence. The vast mullioned oriels make the most of the misty northern day. No interior arrangements are sacrificed to a proud façade. The outside at once declares that the inside has been the great object of the architect's solicitude. It does not court the suffrages of the public at the cost of its interior hospitalities. Every jutting gable and shadowy recess is a mystery, of which the key is only to be found in some internal convenience and comfort. And yet, with all this carelessness of what the world may

think of it, the ancient mansion in this style, carries, to our minds, a nobler air than any other form of private habitation hitherto devised—an air as much braver and nobler than that of the modern "Grecian house," as a living face, lighted up with health, strength, humanity, and kindliness, though somewhat irregular in feature, is lovelier and braver than the waxen Adonis of the hair-dresser's shop window."

In this passage is expressed an intelligible idea, and a tangible direction is implied; but we should like to know how a pupil of Mr Scott's would set about making his "villa" "the very embodiment of innocent and simple enjoyment," and "the reality of everything which tends to the appreciation of country pleasures in their more refined form!"

There is one class of building to which Gothic architecture might be applied, without encountering any of the obstacles and drawbacks alluded to in the foregoing pages; we mean farm-houses and farm-buildings. Permanence and economy are usually considered before anything else in this order of edifice; and these prudential qualities are the best foundation for a vital revival of domestic Gothic architecture, which is often most beautiful when it is most humble, and which never shirks any duty, however homely. If our builders of farms and the lowest orders of *permanent* rural edifices, would be persuaded to build on the principle of making their work as little "architectural" as possible, but letting that little be pure Gothic, then, indeed, we should be beginning at the beginning—which we have shown to have been impossible in urban domestic building—and there would be some chance of creating a really popular sympathy with an art for which, we repeat, the people, at present, do not care in the least, although they spend enormous sums of money upon it. Of course we cannot expect that such works would be put into the hands of professed architects; and, indeed, they would not be the likeliest men to do it well. The bricklayer, the carpenter, and the village stone-mason, however, would require some instruction; and, for their sakes, we entirely agree with Mr Scott, when he says: "It is a pity that no work has ever been undertaken, to illustrate the humbler remains of our traditional architecture. We have excellent works on our cathedrals and parish churches, on castles and mansions of the higher class, and generally on remains of a decidedly architectural character; but we have none upon those humble but no less interesting class of buildings. Yet I believe they would show, in a still more remarkable degree, the wonderful instinct for beauty which prevailed so long as we retained our indigenous style of building." Every year the field for such a work is being narrowed by the decay and destruction of ancient work; but there is still enough left to constitute a most valuable series of illustrations. The following passage will surprise our readers, who have never before coupled together the ideas of barn-building and architecture:—

"Few of these rural structures are so characteristic as the barns; and here the succession is much more complete than is usual in houses; for, though the barn of one country differs greatly from that of another, each seems to adhere to its own type from age to age, with no variation beyond the gradual deterioration in taste before mentioned. We have, in England, barns of every period during the last six hundred years, and with less essential changes of construction than perhaps in any other class of building. I only recollect two important varieties of type—that with aisles, and that without—each subject, of course, to change of material, particularly from that of stone or brick to timber. The celebrated Glastonbury barn is, I suppose, the finest specimen of the stone barn without aisles. It is of the fourteenth century, and is as fine a building as many of the churches or dining halls of the period. The great barn at Ely, now destroyed, was probably the finest specimen with aisles. It was of the thirteenth century, and on a grand scale. That at Peterborough is of the same age, and is still perfect. There is a noble one at Harmondsworth, in Middlesex, which shows the same type entirely carried out in timber. The very same construction is kept up to the present day, in districts where timber is abundant—differing only in the inferior manner in which every part is carried out. It retains the mere rudiments, but in the lowest state of degradation. The barn and the dining-hall in early times were often not much unlike. At Nurstaed, in Kent, was, till lately, a hall of the fourteenth century, very much like one of these noble barns, having aisles with timber pillars; and the Bishop's palace at Hereford is found to have been formed out of a vast hall of Norman date, and of the same construction. This we take as a hint, that there will be no inconsistency in our applying the construction of these noble storehouses to other purposes to which we may find it suited."

We will not accompany Mr Scott in his disquisitions on the higher orders of country architecture. These are too vague to be of much service to any one. The succeeding chapter, on street architecture, though less vague, is ineffective, from the non-recognition of the fact of that apparently inevitable impermanence, which makes it almost absurd to speak of "architecture" in the same breath with "street." We agree with Mr Scott, when he calls London "a huge wilderness of ugliness." We disagree with him, in imagining that it can be improved, or, indeed, made otherwise than still more base by any merely *artistical* endeavours. As you must give the painter his canvas and his colours before he can produce his picture, so you must give your architect the means of building *permanently*, before you can call upon him to produce anything having the smallest pretence to be called architectural. A London house is a semi-nomadic structure, half-way between a house—according to the ancient notions of a house—and a tent. But, even were the objections of impermanence done away with, there are other conditions of modern street-building which are scarcely less fatal to architecture. "The primary condition of street architecture," says Mr Scott, "is, that each house can, as a general rule, present only one part to the view, and that this part is usually a single plane, and part of the same plane with that of an indefinite number of other fronts. Legislative regulations have, from time to time, rendered this condition more and more absolute, by either forbidding, or reducing within the very narrowest limits, projections or breaks in our street architecture; *so that we have now submitted to us the problem of how to produce a pleasing effect by dealing with an almost continuous plane.*" Mr Scott's suggestions for the production of architectural effect under these fatal conditions, seem to us to be very feeble and hopeless. "The balcony," he says, "was comparatively little used in the Gothic architecture of northern Europe, though most extensively in that of the south; but it has become so usual among ourselves, that it is absolutely necessary that it should be systematically used in any attempts we make to generate a style for ourselves. Happily, our building acts do not forbid their use." But, unhappily, the spirit of Gothic architecture does! Again: "One very valuable element in street architecture, is the individualizing of the houses, giving, so far as possible, to each its own front, clearly marked out from those of its neighbours, rather than grouping them in masses. I do not insist strongly on this, as there are difficulties about it; but I wish to call attention to the fact, that, where every house has its own individual design, the prevailing character of the architecture is, of necessity, *vertical,* while, if the houses be uniform, or grouped into large masses, it is almost as sure to be *horizontal;* and I need not say that the difference in the effect is prodigious." Most certainly it is! But Mr Scott forgets the fact, that separate proprietorship is the only economical, and, therefore, architectural justification of such a separation of design as he recommends. Variety, obviously, for variety's sake, as this would be, is more displeasing to the truly artistic eye, than the dullest uniformity.

In connection with this question of street architecture, we are glad to find that Mr Scott administers a little wholesome abuse to the architecture of the famous Rue de Rivoli, in Paris. "People," he says, "think the Rue de Rivoli the finest street in the world, instead of being, in many respects, one of the dullest. That street, which is in every one's mouth as the beau ideal of beauty" [*sic*], "consists of a house with two plain arches on the lower storey, and two Quaker-like windows on each of the others

—not a bit better than any architect's pupil could draw, after being six months in an office—repeated some five hundred times in a row." All Mr Scott's suggestions for remedying the evils of street architecture, and escaping from the vast and various difficulties which beset the pursuit of beauty in this direction, seem to us very weak and worthless. The one hope for the future of street architecture appears to us to be in the probability, or at least possibility, that our Scotch system of building houses in flats may be extended, so as to include the habitations of the higher classes. This system, if so extended, would ultimately lead to a modification of the present system of short land leases; for the houses would have to be of a magnitude too great to admit of slight, unarchitectural construction. And not only would the absolutely fatal impermanence of street-building be thus done away with, but the other great difficulty of street architecture—its wearisome uniformity—would vanish; for it is only when houses are small and low, that a considerable series of them in one pattern looks mean and unarchitectural. It was the architect's fault, that Victoria Street, Westminster, which consists of houses built on this system, was not made to look architectural. The houses in this street are substantial and large enough to have allowed of a very effectual treatment in Gothic architecture. They are entirely disgusting as they stand at present, in all the pride and vulgarity of Renaissance decoration. We have never seen the remark made, although it is an important one for street architects, that the very essence of all classical architecture, including the various forms of Renaissance, requires, in order to be even tolerable, a perfectly definite and tangible unity. The range of club-houses in Pall Mall is the finest modern production of Renaissance architecture in Europe; and here almost every house is more than distinct by character—it is locally detached from its neighbour; and every block constitutes a handsome, intelligible unity. In Victoria Street there is no such distinction of edifices. The poor perfection of which the style is capable, was, for obvious economical reasons, abandoned, and that element of indefiniteness introduced which Gothic architecture is alone able to turn to architectural advantage. A long, uniform façade, is not the most beautiful shape for Gothic architecture to take; but the common supposition, that it is incapable of taking that form, is, so far from being the truth, that it is the *only* style which can take it, without contradicting its own artistic laws.

Mr Scott, in his well-meant enthusiasm for the pointed style, endeavours to make it out that it is capable of doing more than it or any other style can. He says, for example:—"Those little streets which we find in the outskirts of London and great towns, and which contain the residences of the poor, with here and there a little shop, are at present as offensively ugly as it is possible to fancy. A very little thought in designing would obviate this. If the windows were margined with red brick, and perhaps had simple wood mullions, the roofs made moderately high, with a continuous ridge parallel to the street, and just divided by the coped party-walls and chimney-stacks, and with plain dormer windows, these streets would at once become pleasing, and at little expense. They want little more architecture than such a mere touch as this; and our style gives all that is wanted, without the slightest effort." Mr Scott is, we are convinced, wholly mistaken in supposing that it is possible, under any conditions whatever, to make a street of very small houses in a great city look anything but mean, miserable, and worse than poverty-stricken. Is not such a street the most unmistakeable expression of one of the ugliest facts in human nature, and more especially English human nature,—namely that of the incompatibility of man with man, and his preference of a fœtid pig-sty of his own to a share of a palace which is also shared by others?

In Mr Scott's chapter on public buildings, we do not find much that would interest readers of the articles on architecture which have already appeared in this Review; nor do we think that his suggestions, in that on commercial buildings, are likely to be of much use. We agree with him in admiring the handsome old warehouses of Nuremberg; but the preciousness of space in our great cities, puts out of the question a mode of construction by which six storeys out of nine were placed in the vast slanting roof. In the remarks "On the boundaries of truth and falsehood in architecture," we find some of the best things in the book. The most famous of recent architectural critics have bungled in attempting to define those boundaries. Mr Scott maintains that they are indefinable. "The confines of truth and falsehood," he says, "are just as difficult to be traced in morals as in art. A fabricated story in a newspaper and in a tale-book do not seem very essentially different; a profession by word of mouth of fidelity and friendship, seems much the same thing as commencing a letter with 'My dear sir,' and ending it with 'very faithfully yours;' and every day brings with it many instances in which the exact line of demarcation between truthfulness and deception is most difficult to define. Yet who would venture to argue from this that truth is a mere phantom, and that, because we do not always know its boundaries, and must often admit what is in a sense false to be no deception, or what is literally true to be in fact fallacious, we must give up truth as a mere Utopian imagination, and indulge in falsehood *ad libitum?*" Mr Scott shows that in art, as in morals, the *intention to deceive* is the essence of the falsehood which is to be abhorred, and he gives a number of examples, by which his position is thoroughly proved. We regret that our limits will not allow us to go further, with Mr Scott, into this highly interesting matter.

The concluding chapter of this work is on "The architecture of the future." The greater part of this chapter is more than usually marked with the prevailing fault of the book, namely, an appearance of simplicity and practicability, and a reality of vagueness and impracticability. The most intelligible and useful observation in this section is, perhaps, the prophecy that the architecture of the future must unite the two great constructive principles of the arch and the lintel, more closely and vitally than they have yet been united. We have no doubt that the feeling of this necessity has a great deal to do with the extravagant favour with which the Italian pointed style is beginning to be regarded, although that style (for all Mr Ruskin's brilliant pleading to the contrary) " is, *per se*, very inferior as an architectural style to the cotemporary architecture of England, and especially of France."

Let us part with Mr Scott on good terms, by quoting, with decided praise, the following sensible and acute remarks on the peculiarity of the present position of the world in respect to architecture:

> "The peculiar characteristic of the present day, as compared with all former periods, is this, that we are acquainted with the history of art. We know better whence each nation of antiquity has derived its arts, than they ever knew themselves, and can trace out with precision the progressions of which those who were their prime movers were almost unconscious. What, for instance, did the Greek know of his joint debt to Egypt and Assyria for the elements from which he developed his noble architecture? The Roman, it is true, was conscious of his copyism from the Greek, but was probably ignorant that he was only overlaying with a Grecian exterior an indigenous architecture of his own land, and that the *native* and the *imported* elements were ever striving for the mastery. Still less conscious were the Romanesque builders, that they were developing out of the ruins of an old world an element which Rome had neglected to perfect, and which was destined to generate, under a new civilisation, a style of which the ancient world had never seen even the faintest foreshadowing; and I fear our glorious builders of the thirteenth century, while revelling in this amazing production of human skill, were almost as unconscious of what they had reached, or how they had attained it. It is reserved for us alone, of all the generations of the human race, to know perfectly our own standing point, and to look back upon a perfect history of what has gone before us, tracing out all the changes in the arts of the past, as clearly as if every scene in its long drama were re-enacted before our eyes. This is amazingly interesting to us as a matter of amusement and erudition, but I fear it is a hindrance, rather than a help, to us as artists."

ART. IV.—1. *Notes on the Constitutions of Universities, with reference to the Rights of the Scottish Graduates.* 1857.

2. *The Scottish Universities, and what to Reform in Them.* By ALEXANDER KILGOUR, M.D. 1857.

3. *Inaugural Discourse delivered to the Graduates of King's College, Aberdeen, on his Installation as Lord Rector.* By JOHN INGLIS, LL.D., Dean of the Faculty of Advocates. 1857.

4. *Report of a Public Meeting in favour of the Improvement of the Scottish Universities, held in Edinburgh, 31st December* 1857.

5. *Address of the Right Honourable* SIR JOHN M'NEILL, G.C.B., *to the Associated Societies of the University of Edinburgh.* 1857.

THE movement for a reform in the system and working of the Scottish Universities has of late been invested with much additional interest, and has acquired fresh life from the public pledge, given by the late Lord Advocate in his place in Parliament, to introduce, during the present session, a Bill which should deal with the wants of our academical institutions. This announcement had, owing to the enlightened sentiments and educational experience of Mr Moncreiff, raised high anticipations among the friends of rational reform; and deep regret has been felt, that circumstances have, in the meantime, prevented the learned gentleman from carrying his purpose into execution. But the promotion of the Dean of Faculty to the office so ably filled by Mr Moncreiff. has not damped the hopes thus excited, or lowered the expectations of those who look with confidence to legislative enactments as the grand remedy for all our shortcomings. Under these circumstances, it may not be deemed out of place to review the present state of the University question, and to sketch in outline a consistent scheme of academical polity. We shall take advantage, so far as suits our purpose, of the many suggestions which the discussions of the past year have evoked, but shall feel it our duty further to recommend certain modifications of existing arrangements, which have hitherto been almost entirely overlooked, and which, though necessitating but a slight addition to our present machinery, would, we are convinced, tend immensely to elevate the standard of education in our schools and colleges.

University reformers may be divided into two classes; *First,* those who admire our present system as approaching perfection, and triumphantly record its results as proof undoubted of its surpassing excellence, and who thus propose the smallest quota of change, extending little beyond increased endowments to professors, and the establishment of additional chairs. And, *Secondly,* those who discover defects in every niche of the fabric, "from turret to foundation stone;" and who, accordingly, are ready to apply remedies of the most radical and sweeping character. That truth and discretion lie between these two extremes, will be readily conceded by all who, knowing experimentally both the Scottish and other systems of academical economy, are able to take a wider view of the University question, and judge of the merits and defects of present arrangements with an impartial eye. In order, therefore, to form a satisfactory estimate of the amount of extension and improvement which our colleges require, in order to meet the wants of the nation and of the times, it will be necessary first to examine briefly in what respects they excel, what they fall short of, kindred institutions.

The characteristic excellence of the Scottish Colleges is, the existence of an actively wrought lecture-system, combined with constant and searching catechetical exercise, under the highest responsible authorities of the respective classes. This, indeed, is the grand and distinguishing feature which, in spite of great shortcomings, has largely contributed to stamp on the national character one of its peculiar marks, and which has rendered Scottish graduates noted throughout the civilized world, for the readiness with which they turn to practical account the acquisitions of a college curriculum. It needs no elaborate discussion to prove, that the interests of sound education, and the requirements of the untrained mind, demand that a healthy intellectual circulation be constantly maintained, and a course of mental gymnastics rigorously practised, which shall invigorate and uniformly develop the whole frame of our intellectual being; which shall render it capable of thinking and acting for itself with readiness and self-reliance; which shall impart a firmness, an independence, and a dignity, to its whole character and bearing; and which, by leading it to investigate in a spirit of candid inquiry, shall create a thirst for study and a desire for original discovery. To such a result the arrangements of the lecture system directly and eminently conduce. The professor is ever in communication with his pupil, directing his energies, encouraging his exertions, resolving his doubts, and removing his difficulties, cheering him onward by friendly advice, moulding, polishing, and sharpening his faculties, and, in a word, bringing into play, in the small community of the class-room, those powers and habits which shall, in after years, be most frequently and most influentially employed in the active business of every day life. The tutorial system, on the other hand, has been found to produce men who are rather "dungeons of knowledge," than enlightened and enlightening members of society; rather machines, which repeat with clock-work accuracy, the sentiments and conclusions of others, even to the minutest fact, than intelligent beings of elastic mind, who can use with independent power and original direction, those stores of information, and springs of action, which it is the function of a university training to supply. The blame of this, however, attaches not to the tutorial system itself, but to the careless manner in which it has been administered. From causes too numerous and too intricate to trace, the tutorial system long since fell into a languid and torpid condition, and the real teaching of the colleges, instead of being conducted in the recognised halls, and by the recognised tutors, has been, to a great extent, carried on in the apartments of the "coaches," or "grinders." These private teachers, who, it must be remembered, have no official connection with the college, and whose great object is to acquire a "grinding" reputation through the honours gained by their pupils, aim at the inculcation of a large mass of facts, selected, too often, without the slightest regard to utility, method, or mental culture, but solely with reference to the taste and style of scholarship, which the examiners for the year may be known to possess. This forcing-house system, taking the place of the tutorial, for which usurpation the many and valuable prizes of Oxford and Cambridge offer but too great temptations, has brought much undeserved obloquy on a plan of tuition, which, if steadily and energetically worked, might be made an instrument of the greatest utility in the higher departments of a university education. For the tutorial system, when properly carried out, as in some, at least, of the Colleges of Oxford and Cambridge, and in Trinity College, Dublin, is, in its essential quality, nothing but the Scottish lecture system, including daily readings and daily catechetical drill—with this important improvement however, that each tutor, who is also a Fellow of the College, and a full professor, so far as rank and functions go, has at the most only twenty-five or thirty youths to deal with, instead of a hundred or more, as with us; and that thus each student is called upon to take part in the oral examinations every day, or every second day, while it is well known that in some of our Scottish institutions, weeks often elapse between two successive class appearances of an individual alumnus. But, notwithstanding the important consideration, that more frequent drill and higher scholarship may be expected in small classes, we are so deeply impressed with the counterbalancing advantages which large classes and simultaneous training possess, that we should not for a moment think of advising that the tutorial should, in our colleges, supersede the professorial. Whatever changes may be adopted, let us adhere to the professorial system as pre-eminently adapted to form and discipline the mind.

There is another point closely connected with, and immediately flowing from the foregoing, in which our Universities excel their southern rivals; we mean the close and searching scholarship which the professorial system, *when properly conducted*, must and does produce. The bulk of our students cannot, it is true, boast, when leaving college, of varied and extensive reading in any department of learning, but their acquirements are, generally speaking, of a minute and accurate kind, so far as they go; and it may safely be asserted, that in the knowledge of first principles, and of the fundamental laws of language and of science, they excel the *mass* of English graduates. In the years of advanced life, it may be occasionally necessary to content ourselves with a superficial study of some special branch of knowledge; but, in the school and the college, such a "mental dissipation" must be most zealously and rigorously eschewed, as inducing habits of carelessness, imparting to the *man* a constitutional remissness, and banishing every trace of that quality of *thorough*, which is so necessary to success in the battle of life. No smattering, however varied and extensive, can atone for the want of minuteness and accuracy; and the very habit which is formed in acquiring this accuracy, is one of the most valuable intellectual gains which it is possible to make. In this respect, the Southern Universities fail, whether owing to an inaccurate school training, to the practice of getting over a large amount of classical reading, or to the absence of minute and searching questions in the examination papers.* It is no uncommon thing to find an English boy, or an English graduate, who can translate the higher authors with readiness and fluency; but who, if closely interrogated on grammatical facts and rationale, or other matters of sifting detail, will betray a lamentable ignorance of first principles. It is highly proper that our college classes in Latin and Greek be eminently *literary classes*, but we must scrupulously guard against the possibility of their becoming *merely literary classes*. To advocate such an exclusiveness in academical training, is to betray gross ignorance of the great purposes of a classical education. In no way then can this thorough drill, high mental culture, and literary taste, be more effectually imparted, than by that combination of the professorial and tutorial methods, which, while it ensures the services of a common directing head, and the advantages which we have seen such a guide to possess, renders possible at the same time the acquisition of an extensive and massive scholarship. The mode of this combination we shall set forth in the sequel.

Again, the prominence given in our Scottish Colleges to Logic, Metaphysics, and Ethics, and the study of these under the daily guidance of a master-mind, tend largely to form and mature the faculties, to adapt them to the higher demands of philosophical speculation, and to enable them successfully to grapple with the most difficult problems of mental science and of government. The doctrines of ethical philosophy, an dthe abstractions of metaphysical speculation, form the cope stone of our academical system; and these in their early study require, much more than classics, the assistance of a guiding-mind. In England and Ireland, however, these subjects are left almost entirely to text books, and private study, and "coaches;" and thus, where no systematic training is attempted, the loss to philosophy and education may be easily imagined.

On the adaptation of our colleges to the genius of the people, we need not enlarge. Their great mission has been to leaven the masses, and this characteristic must be scrupulously preserved. Our students are drawn even from the lowest classes; and returning at intervals to their former associates, carry with them an academical inspiration, which exerts no small influence on the tastes and modes of thought of our humblest artisans. But the gap between the Oxonian and the mechanic is a wide, nay almost impassable one. At length, however, Oxford has discerned the gulf, and has partly endeavoured to bridge it over, by the recent institution of extra-academical examinations, and the degree of A. A.

The defects of our Universities and the disadvantages under which they labour are, no doubt, many; but we shall here note only the more glaring. And of these, the extreme youth (and consequent unpreparedness) of entrant students, is that which naturally claims our first attention. This haste to be wise lowers unnecessarily the style of academical teaching; it prevents rapid and great progress in a large class, and thus deprives many maturer minds of that superior training which a college is designed to afford; it keeps down the character of the country schools, by drafting off unripe pupils; it takes from teachers a stimulus to high scholarship, while, at the same time, it diminishes their income, and renders their office less worthy the ambition of accomplished men. The schools are entirely competent, in the main, to train youths to that pitch of attainment which at present admits to the Greek and Humanity classes; and we have full confidence, that if called on for greater exertion and higher preparatory scholarship, they will gladly respond, and show themselves not incapable of greater results. They but slumber in the torpidity of our educational winter, and want only the stimulus of an increased demand from the colleges, and increased remuneration for their labours, to rouse them into full life and action. That these are the two great desiderata, the schools of the north of Scotland shall be our witness. The Dick and Milne Bequests, on the one hand, and the bursary competitions at Aberdeen, on the other, have applied so effectual a spur to teachers—in the favoured districts especially—that the classical training in many of the country seminaries would do credit to institutions of far higher pretensions.

The want of a regular system of examinations at the end and at the beginning of each session, is another defect attaching to all our colleges, except those in Aberdeen. And yet how pressingly important is it, that all alumni should be compelled, at the end of the academical year, to give proof of their diligence, and to show in public trial at the opening of a new *semestre,* that the summer has been employed in piling and enlarging the stores of a winter's acquisition. In consequence of this defect of system our students are wholly unfit, at the end of their curriculum, to stand a rigid examination requiring minute philological and historical knowledge, with extended reading in classics or science; and we do not wonder that, in the race for civil and military appointments, given by comparative trial, they are left far behind, when matched against students from Oxford, Cambridge, and other colleges, in which the degree competition is kept constantly in view, as the end to be arrived at, as the point of junction to which the lines of the *quadrivium* converge.

The paucity and worthlessness of the prizes held out to superior talent and industry, we reckon as not the least of the disadvantages under which our institutions labour. Compare us in this respect with Oxford and Cambridge, and how do we show in the juxtaposition? The southern institutions have, it is true, suffered much by repletion; and we have no desire to rival them in wealth, or in the corruptions of system, to which their apparent blessings have directly led; but we *do* wish a reasonable amount of encouragement to be held out to those deserving youths who have the will to work and the ability to conquer. The poverty of our Universities and High Schools is a stain on the national character, and we are utterly at a loss to account for those testamentary freaks, which have neglected the higher education, while they have crowded the Scottish capital with palatial edifices for the most elementary instruction. Thus, whether a lengthened study of certain branches is to be encouraged, or higher attainments in the *few* secured, or additional chairs endowed, or aged and infirm professors pensioned off, we look in vain for funds to effect any of these good objects. What a reform might Donaldson's princely mortification ere this have wrought, if judiciously applied to the extension and improvement of our colleges and higher schools!

The shortness of the college session, of which many have complained, is less of an evil than the inexperienced might suppose. If colleges are to be mere cramming schools, then by all means lengthen the term of academical attendance to nine months instead of six; but, if they are to remain, as the model-farms where an intellectual cultivation is conducted, where the best seeds are selected, and the best modes of treatment indicated, then six months afford ample time for the hard grinding work of laborious mental occupation. Still, it cannot be denied that the summer recess is well nigh lost by our present arrangements; and it shall, therefore, become our duty, ere we close this article, to suggest a means of employing the long vacation to better purpose.

Of other defects which adhere to our University system, we may mention the meagreness of the college course. and the absence of text books on subjects kindred or collateral to those which form the basis of professorial prelection. And no less to be deplored is the weakness of the teaching-staff, which is notoriously insufficient for the thorough working of the classes, and for the full representation of subjects, whose intrinsic value, and whose bearings on society, render them objects of prime importance in an academical curriculum.

Nor must we forget the little consideration which is attached to graduation honours. The apathy of the clerical, legal, and medical professions, in not demanding from their candidates a degree in arts as a passport to the special duties of their respective callings, is unaccountable; and, in the case of the first two, inexcusable, whether we regard the reflex influence, which such a regulation would exert on the general education of the country, or the direct bearing it would have on the character and interests of the learned bodies themselves. The practical difficulties in the way of such a compulsion are by no means insurmountable; and if the colleges do their duty, these will be absolutely *nil* in the case of law and divinity. A large proportion of the clergy already graduate, especially in the Aberdeen Colleges, where the steps to Degree are *gradual*, and all who look forward to theology as their goal, approach graduation; so that in their case, the hardship would be a very trivial one indeed; while the Bar is replenished principally from that class of society, to which a little additional delay and expense are matters of comparative insignificance. The Faculty of Advocates have recently attached a premium to graduation; and we trust that, finding the good effects of the regulation, they will ere long exact a degree from all their probationers. With the medical profession greater caution must be observed in introducing any change, but the sooner a guarantee of an adequate preparatory training is required of every embryo medicus, the better will it be for the profession and the public.

It should be known, that in the Episcopal Church of England and Ireland graduation is an indispensable condition of license—

that a similar certificate of education is required by the Irish Bar, and all but required by the English—and that the Universities of Oxford, Cambridge, and Dublin, admit as graduates in medicine only such as are also graduates in Arts. In this last case, however, the number of graduates is very seriously diminished by the expense of the Arts' course.

Many defects of greater or less magnitude remain to be noticed; but the space to which we are limited prevents us from discussing them in detail. Contenting ourselves, therefore, with the incidental mention which they shall receive, in bringing forward our scheme of reform, we proceed to lay before our readers the Remedies which we deem sufficient to restore to our Colleges that honourable reputation which they long possessed among the institutions of Europe. Hitherto our remarks have had reference principally to the Arts' curriculum, and to it, as the foundation of all professional training, shall our remaining observations be mainly directed, though the wants of the other Faculties, especially Divinity, cry loudly for a competent expositor, and a liberal reform.

The remedies for existing defects naturally range themselves under two heads—those which have reference to the political administration of University matters generally, and those which deal with the internal organization of curriculum and the teaching apparatus. In regard to the former, some have advocated an infusion of out-door blood into the managing body, and have claimed for graduates a chartered right to a voice in the decisions of the University senate. That Senatus meetings would be much improved by greater publicity being given to some of their proceedings, and by the introduction of a few men of less academical bias than the professors, at the discussion of financial matters, and the exercise of the elective power, we have every reason to believe; but we do not see that any feasible proposal has yet been made to effect this desirable result; nor do we mean to suggest any other than the admission of the Press. It must be acknowledged, however, that the idea of the graduates' *chartered rights*, has been entirely exploded by the sagacious and pains-taking author of the pamphlet, entitled, "Notes on the Constitutions of Universities;" and most of the supporters of the graduates' claims have now been reduced to the plea of *utility*. It is extremely probable that graduates will take a greater interest in *Alma Mater*, if she confer on them certain privileges—making them, for the time, patrons, of a kind, and holders of a power, however small; and if the graduates are pleased, and the Universities satisfied to grant the concession, we offer no strong opposition—but on *one condition*. If, however, the proposal be pressed beyond a question of expediency, we must refuse our assent. We see no solid grounds for the demand, either in principle, precedent, or parallel. Many of our reformers are, in their zeal, led astray in this, as well as other matters, by the contagion of English example, and stay not to inquire whether the cases of Oxford and Edinburgh be similar, and whether the principle for which they contend be in itself a sound one. Why should the mere payment of four years' fees, to different professors, entitle an individual to take part ever after with those professors in the passing of statutes which are to regulate University matters, and in electing officers who are to administer her concerns? If the claimant of such privileges has been an attentive and diligent student, has he not received better value for his money, in a six months' session, than he is ever likely to procure again for a similar amount? and, if he take the degree of M.A., does he not expect from it an advantage fully commensurate with the outlay? In a commercial point of view, therefore, the college and the student are fairly quits; but, if we examine the relative claims more narrowly, we shall conclude that the obligation is all on the part of the student, and not on that of the college, which supplies capital more cheaply, and in greater measure, than it can elsewhere be had on equal terms. And, accordingly, if our Universities commenced an agitation, having for its object the collection of funds from former graduates, we could appreciate the justice of the appeal, and should second the demand with hearty approval. But, when a "Rights' Association" is formed by men who *have* never contributed to a fund for the foundation of prizes, the endowment of assistants, the pensioning of aged professors, or for otherwise benefitting the cause of literature and science in their foster-mothers—who do not propose to bind themselves to any annual contribution for such purposes—and who do not lie, or mean to lay themselves, under any responsibility in reference to academical teaching, or University management, we confess our inability to discover the grounds of their appeal, or to advocate their alleged claims, further than, as already stated, that the arrangement *may* prove of utility to the colleges, in increasing the number of students by means of these interested canvassers, and in creating a greater demand for Degrees. Privileges of the kind demanded should be sought on the ground of benefits conferred, or of responsibilities incurred. So soon, therefore, as the Scottish graduates contribute, say a guinea or thirty shillings annually, to the college revenues, for such purposes as those suggested above; or so soon as they return to the primitive practices of academical residence, teaching responsibility, and community of interest, we shall gladly favour their pretensions.

Nor does the demand for Parliamentary representation seem to rest on a better foundation. The desire for English models has led us into many misconceptions, and the capricious interpretation of terms has caused much confusion in our recent discussions on University matters. Thus, some have rushed to the conclusion, that because the English Universities enjoy Parliamentary representation, so should the Scottish. Now, we do not mean to go at length into the argument of this question, but simply remind our readers of two important considerations which should not be lost sight of in our reasonings on the subject. The first is, that the privilege of representation was conferred on the English Universities, and on Trinity College, Dublin, by a Diploma of James I., in defiance of the strong opposition of the Commons, to serve, it would appear, his political purposes, and gratify his pedantic vanity. And the second, that the electoral franchise in the colleges was, in the first instance, bestowed on the "Chancellor, Masters, (*i.e.* Teachers) and Scholars," who alone were the regular residents. Residence, therefore, seems to have been the qualifying condition; and, as the college rooms of the Masters and Scholars were their castles and their domains, and as the great majority of them had no voice in any other constituency, the reasons for admitting them to citizens' rights were not only feasible but urgent. The extension of the franchise to Masters of Arts, on the payment of a fixed annual sum, whereby their names are kept on the college books, and a fictitious residence is acknowledged, was an arrangement of comparatively recent date—still keeping in view, however, the original ground of qualification. It does not appear that the property element came into consideration.

If the Scottish Universities can present any analogous claim, or can form such a constituency, they at least deserve to be heard; but it is a matter for debate, whether it would not be better to amalgamate the constituencies of Oxford, Cambridge, and Dublin Universities, with those of the cities or counties in which they are respectively situated, and apportion the seats thus set free to some of our inadequately represented, or unrepresented, burghs, than, by enfranchising Scottish graduates, to extend an existing evil, and perpetuate a system which has produced but very little practical benefit, while, on the other hand, it has caused much mischief. Education is doubtless a public interest, but it is not an independent and isolated interest, and does not need a separate representation any more than the manufacturing or shipping interests. But education, in the sense in which the agitators use the term, is *actually more fully represented* in the House of Commons than any other individual interest whatever, not excluding the shipping, manufacturing, or banking; while education, in the proper signification of the term, would not be adequately represented by the proposed plan. Let those, however, who have the interests of Education at heart, be energetic and persevering in sounding, in the ears of Parliament and the Government, the disadvantages under which she labours, and the restrictions which cripple her exertions, and they will gain as ready a hearing and as willing redress, as the shippers, manufacturers, and bankers have gained by their importunity. For there are very many gentlemen in the House of Commons who, we feel convinced, are both quite as ready to identify themselves with the cause of higher education, as even "the Honourable Member for the Scottish Universities" could be, and quite as able as any man likely to be elected by a graduate constituency, to advocate, with proper "pressure from behind," the interests of education and of learning. For the demand of such an "improvement" as Parliamentary representation, we do not see any reasonable grounds; and we regret that the energy which has been spent on its enforcement has not been directed to the discovery and amendment of defects which have long been tolerated in the internal administration of the teaching Faculties.[1]

But we turn with pleasure to the second class of remedies, which are of far higher moment, and of more direct and practical bearing, than those which we have already discussed. And foremost among these, we reckon *compulsory graduation* for admission to the learned professions, including Teaching. The degree of M.D., the title of Rev., and the appellation of Advocate, pre-suppose a certain amount of training and of technical knowledge, fitting more or less for the exercise of the functions proper to each class; but they are no guarantee for general culture of mind, or for the possession of a liberal education; and though many men of superior attainments may be found in these professions in Scotland, still it cannot be denied that few will compare with their English-reared brethren[2] in *extent* of acquirements. We are a thoroughly practical people, and far more readily than the English turn to account our small academical gains; and if, therefore, a plan can be devised which shall give us the Englishman's massiveness of scholarship, together with our eminently practical turn and habits, it deserves our highest commendation. Such a result seems quite within our reach, by rendering the Arts' course imperative on all professional students, if at the same time we adopt such modifications of system as shall ensure the vigorous working of our undergraduate classes. If a youth have passed, with diligence and credit, through a course of classics, mathematics, ethics, logics, and metaphysics, he will apply himself with greater ease of comprehension, and greater profit, to the special sciences which await him as a student of medicine. The foreign terms with which every department of natural science teems, will be more thoroughly understood and more readily remembered; the habits of reflection, taste, and judgment will be nurtured and confirmed; the laws of strictly professional science more radically and more fully apprehended, as being founded on the elementary principles which the Arts' course has inculcated—the powers of reasoning directed and moulded—the foundations of a rational jurisprudence more solidly laid—and the mutual relations of mind and matter more clearly perceived. Doubtless many successful practitioners are made without this ado; but the direct result of a mere professional training is to produce empirics, and not ornaments of science and of society. We say the *direct result*, for many minds triumph over all hindrances, and, while they compel us to admiration, leave us at the same time to regret that they had not early enjoyed the benefit of an enlightened education, whereby they might have gained to the world years of the working of a powerful and cultivated intellect.

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[1] [We regard it as a proof of the great interest taken at present by educated men, in the discussion of the proposed remedial measures, that, in two Articles of this Number besides the one devoted .pecially to the subject, earnest attention is given to the reform movement. Our readers will notice, that the writer of the Article on Parliamentary Government, takes a wholly different view of the question of University Enfranchisement from that advocated in this Article. Though our own opinion coincides with his, we have not interfered with the statements made above, because we believe that a free expression even of antagonistic views, is fitted to be helpful to a satisfactory solution of this question.—Editor.]

[2] We mean, of course, those who are reared at either of the great Universities, and not the multitude that issue from the mere medical schools, or that purchase their degrees, after study or no-study, at St Andrews or Aberdeen.

Of what benefit a similar course would prove to the students of Law, of Divinity, and of Pædeutics, we need not show by special illustration. The principle of an Arts' training is already admitted by the legal and clerical professions, in the regulations which exact attendance on certain college classes, or which put a premium on graduation; and the step to be taken is but a small advance on their present position. This advance will, we trust, be at once made; and we earnestly urge on the coming Assemblies, and on the Synod of the United Presbyterian Church, to enact that, after the year 1862, a degree shall be necessary for license. If the undergraduate course be concluded in three years, a degree should be made a condition of admission to the Divinity Hall; but, if it extend over four years, the last session might perhaps be divided between Arts and Divinity. We consider this compulsory graduation[1] of professional students a matter of so vital moment, that we place it at the foundation of our scheme, believing that upon its adoption will largely depend the success of any new measures. Improvements may, it is true, be introduced without this regulation; but with it the colleges will wield a stimulating power, both over University students and country schools, the amount and results of which few can conceive. Let us take good heed, however, that, while the inducements to graduation are increased, the expense of the diploma be, at the same time, maintained at a low figure. For this purpose, let the encroachments of the stamps' collector be resisted; and let such arrangements be made, as that no professor shall individually benefit by the bestowal of any academical degree, whether merited by examination, or granted *honoris causa.* This latter restriction we consider a most important proviso.

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[1] We are rejoiced to see that the Medical Bill of Lord Elcho contemplates graduation in Arts', or an examination on the subjects of the Arts' course before a competent tribunal, as the only passport to the strictly professional examination of the proposed Medical Board.

The certificate of a liberal education being thus provided for, and the goal of a University career established, we proceed to the consideration of an entrance examination, as the first step towards the desired consummation. Our colleges do not stand alone in having no entrance course; but we believe they do stand alone in having a purely elementary class in Greek, and an *almost* purely elementary class in Latin. Many, grounding their arguments on the former circumstance, are of opinion that discretion, and a sense of personal credit and advantage, will, in a few years, serve all the purposes of a regular scholarship test; and there can be little doubt but that, if our junior classes were swept away, ways and means would be found to acquire the necessary preparation for the second class. But a settled entrance course, with a strict entrance examination, is accompanied by advantages which do not appear upon the surface, and which an ill-defined standard of excellence cannot produce. To some of the more valuable of these we invite the serious attention of our readers.

An entrance course, framed by the University authorities, and altered by them from time to time, as occasion may require, gives to the managing Faculties of our colleges (which, we shall presume, are composed of men of high scholarship and large experience in tuition) a distinct voice in the school education of the country, and constitutes them into an Educational Board of perhaps the least objectionable kind that could be devised. It tends directly to produce uniformity of action and of training in the elementary seminaries, instead of the various, and too often absurd, systems now prevalent; and, while it supplies the raw material, it leaves ample room for the display of individual plan, energy, and judgment in the manufacture. It enables a classical professor to estimate what amount of attainment he may expect in his entrant class, and to decide the point from which he should start in his prelections: it affords him a definite *something* to which he can refer for illustration, parallelism, and confirmation of grammatical principles; and relieves him from the heterogeneous mass of students to the varied requirements of whose widely different sections he finds it almost impossible, under the present system, to adapt his teaching. It frees the college from the necessity of puerile drill, and enables her to proceed at once with the performance of her proper functions: it excites the energies and extends the usefulness of her professors, and adds to her reputation.

To the schools of a country, on the other hand, it acts as a most powerful stimulus to exertion. The Entrance Examination Hall is the arena on which the gymnasiarchs are tested, through their pupils; and, on the appearance made by the latter on the day of competitive trial, much of the future success of the master, in regard both to pecuniary gain and official promotion, is made to depend. It places the hard-working schoolmaster of a country parish on the same footing with his metropolitan rival, since the course and the prize, as well as the means of gaining victory, are equally open to both. But, to be *highly* effective in this respect, the entrance examination should be a *public competition*, conducted partly by written papers, and partly by oral answering; not by one professor in his class-room, but by an examining committee of the Senatus, in presence of the University authorities, and with all the pomp and countenance of University sanction. Parchment certificates—say one for every fifth entrant, or even a published list of the candidates, arranged in the order of merit, with the school at which each individual was educated—would, we are convinced, when coupled with a proposal to be made hereafter, apply such a spur to teachers, over the extent of Scotland, as would, in a very few years, educate, renovate, and elevate the whole scholastic profession. Institute some prizes, be it mere honour, and the examination will effect for Edinburgh and Glasgow what the bursar competition has done, in both Latin and Greek, for Aberdeen. But, further, such an initiatory ordeal operates most beneficially on the student himself, in compelling him to refrain from entrance till he has arrived at somewhat of a mature age and respectable scholarship; in affording him time and opportunity for gaining an acquaintance with history and general literature; and in ripening his powers of observation and reflection, so that he may be enabled to derive the greatest possible amount of benefit from a University education. It confines him to well-defined area, with the minutest localities of which he has the strongest reason for making himself intimate; and thus, at the very threshold of his advanced studies, it inculcates the invaluable habit of doing well whatever is done.

The great objection which has been urged against an entrance examination, is, that it will exclude from our seats of learning many of those poor, hard-working, *seri-studiorum* men, who are the very bone and marrow of our country; and admit only the youths whose means allow deliberate and minute preparation for the competition. Did we for a moment imagine that such a result would flow from the proposed arrangement, we should be the last to advocate its adoption; but we feel entire confidence, that, under proper regulations for the due management of the apparatus, no injury like that which is apprehended would be inflicted either on individuals or the country. To avoid the dreaded effect, we would propose—First, That several entrance examinations be held during the year; so that, if a candidate fail at his first trial, he may make up his deficiency before the end of the period for entrance, and thus, by a second and more creditable appearance, avoid the loss of a session. The suicidal facility of the plan now in operation in Edinburgh is palpable; it allows only one entrance trial in the year, but permits a rejected candidate to proceed with his studies—thus making the professor his own "grinder," to prepare for his own second examination of the "plucked" entrants; and, notwithstanding a second failure, the veriest dolts and most incorrigible idlers may, at the end of the session, demand a certificate of attendance, which a professor cannot refuse, and which is all that presbyteries exact. This puts a premium on idleness and mal-preparation. Secondly, That two of these entrance examinations be public competitions, with the "order of merit" duly arranged and published; that one of them be held at the close of the school session (end of June or July), when the struggle for First Place will be principally among the pupils of burgh seminaries; and the other at the beginning of the college session (end of October), when boys from the remote country districts, and students of mature years, would form the great majority of entrants. Thus, town schools would be compared with one another, and country schools with one another. Thirdly, that besides these public admissions there should be opportunities for private entrance afforded, say twice in the year, at convenient times, when the *seri-studiorum* class, and such as found their time and means unequal to an extensive preparatory course, might present themselves one by one before a sub-committee of the professors, and be permitted to select for their own trial, say one Latin and one Greek author, out of the number prescribed for public entrance. This would save the feelings of the more tender, and so lighten the labour of preparation that no serious obstacle would be presented to the really meritorious. We know a good deal of what Scottish students can do, have done, and will do, and pledge ourselves that that spirit, which from hard-earned wages saves L.20 per annum for the expenses of a college session, will save one hour per day for the preparation of a not oppressive course. Mere amateurs, who have no ambition for a degree, and who mean to spend only two sessions at college for some special classes, may, without detriment to themselves or the college, be admitted as *private students*, liable to no examination. In these arrangements regarding entrance, as well as "pass" and degree examinations, it must be remembered that, in all countries and in all colleges, a great deal of laxity is necessarily permitted, for there is no royal mode of turning idlers into industrious men; and the great aim of all legislation in these matters should simply be, to bring up to excellence as many as possible, and to leave below mediocrity as few as possible. The difficulties which many find in the way of this and other desirable improvements will speedily vanish when the experiment is made.

Next to the advisability of seeking from students at entrance a proof of their ability to profit by college prelections we rank the necessity of demanding from them, at frequent intervals during their academical career, satisfactory evidence that the lessons of the professor have been duly comprehended and carefully digested.[1] The principle of *classification* should be most rigorously acted upon in all such examinations; for, as a stimulus and a discipline, the value of such a combination can scarcely be overstated. The certainty of a coming trial, and the character of the certificate to be gained thereby; the dread of a low position in the classified list; the well-grounded hope, that fame will precede the diligent to the bar, the church, or other profession —will ensure earnest attention during the hour of lecture, and unremitting industry in home preparation; while the examination itself will discover to each his own deficiencies, make him aware of his capabilities, and fix on his mind the facts and principles of a winter's acquisition.

And here we would protest against the doctrine, that it is an absurdity for a professor to examine his own students, and pronounce either on their comparative merits or on their fitness for the honour of graduation. Of the insult thus offered to the professorial body we shall say nothing, but express our firm conviction, based not more on theoretical than on practical grounds, that none but the professors are competent either to do justice to the students, or to make the paper what we have hinted it ought to be. Examination sheets compiled by paid or amateur examiners, who do not know anything of the examinees, and who too often strive to show off their knowledge, are more frequently a chance-directed farrago of crude individualities, than a graduated and connected series of well-digested questions to elicit general principles, and to test the judgment in applying the doctrines of previous teaching. Thus we creep into a system of *cram*, and of *crack questions*, and a rational and philosophic training is ignored. We trust, therefore, that the professors will stand upon their dignity, and upon the ground of public utility, and refuse to countenance a proposal which implies a perpetual vote of censure on the entire body. To assessor-examiners we have no objection, as they may somewhat lighten the load which we shall by-and-by propose to lay on the shoulders of professors; but they should never supersede the proper and responsible head, and their functions should be mainly *oral* examination. There are few literary tasks more difficult and more delicate, than the framing of a good and well-balanced examination paper; minute and extensive knowledge of the subject, large experience, and strong common sense, are indispensable to success.[1]

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[1] In the northern colleges, such a system has long been in active operation; and to its influence we attribute the remarkable success which has attended the Aberdeen graduates, in competing with the alumni of Glasgow and Edinburgh for the scholarships and bursaries at the disposal of the several churches. The examinations are held at the beginning as well as at the end of each session, are conducted by paper, and are highly effective of good results in and beyond the college.

To our next suggestion we crave the serious attention of all University reformers, and more especially the teaching body of professors, both because it has scarce been mentioned heretofore in the discussions on reform, and because we consider it *the* remedy which strikes at the root of the greatest defect in our University system. But, before proceeding to lay down its provisions, let us remind our readers that the purposes of a University education are two—First, to train the student in such a manner, and with such instruments, as shall best conduce to develop and rightly influence the moral nature, and to direct, brace, and give action to the intellectual faculties; and, secondly, to impart such an amount and kind of information, as shall, so far as consistent with higher purposes, exhaust the several subjects of study, and be generally useful in any of the walks of practical life. We must remember, however, that of these the first is the grand aim and object of a primary education; and we must scrupulously guard against the possibility of modern utilitarianism converting our mental training apparatus into a mere "useful knowledge" *grubber*. Our first great care, therefore, must be to organise a course whose subjects shall be of a refining and elevating, and, at the same time, of a practically useful character; and, further, to make provision for the special teachings of the professional schools—Law, Medicine, Divinity and Paedeutics. But we must recollect, that even our Arts' course is so far a professional course, since from it directly proceeds that large body of students who devote themselves to the teacher's duties.

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[1] The examination papers, if drawn up on a methodical plan, and with judicious selection, so as to be at once a *resumé* of the session and a *model* for study, by being annually spread over the country would direct to a proper line of reading,' those schoolmasters or students, who, from remote residence or other cause, know little of the plans pursued in our higher institutions, or of the *kind* of knowledge which youths should possess before entrance. The circulation of the examination papers by means of the students we reckon a most important point, as, perhaps more than the prescribing of an entrance course, it gives a directing power in the education of the country to those whose position at the head of the teaching profession entitles them to respect and confidence.

One other remark is necessary, as preliminary to the proposal which is to follow. We have already spoken of the universally admitted excellence of our colleges, in reaching the masses, and affording to the poorest class of our population an academical education, cheap in the preparatory training, and cheap in itself. Now this is exactly one of those good things which, by being carried too far, may become a blemish, nay, a serious evil. In our regard for the poor and the ill-prepared we sacrifice the wealthy and the well-prepared; and the style of teaching in most, if not all, our colleges, is pitched on that scale which suits the advance of the former. The ill-prepared form, no doubt, the great bulk of the entrant class; and thus a conscientious and judicious professor has but one course open to him—to consult the interests of the majority. In a large promiscuous class, it is impossible for a professor to enter into the higher departments of his subject, with that regularity, depth, and *fitness*, which are absolutely required. The zealous, energetic, and competent must be separately provided for, if we expect those results which all seem to desire; yet our present system makes no provision whatever for carrying higher in their education those ambitious and better trained youths, many of whom are every year to be found in all our colleges. We know what Scottish students *can* do in the way of hard work; and we have no hesitation in saying, that, had the more noble of them but the opportunity and the encouragements to extend their reading to classical authors or scientific treatises, which in a heterogeneous class it would be more than folly for the teacher to attempt, we should speedily find a swarm of youths annually passing forth from our University courts, fully able to compete with Oxonians and Cantabrigians in the extent and massiveness of their scholarship, while they would far excel them in the fineness and practical bent of their general intellectual culture. Now it is for this small aristocracy of talent and industry that we are anxious to provide—for those men upon whom depends the fame of our Universities, and who must be made the engines whereby to elevate the standard of education, not only in our academical halls, but also in the several professions, and over the whole country; for it is the *few* of a college, and not the *many*, who gain for it celebrity; and to the *few*, therefore, as well as the many, it is our solemn duty to have regard. Hundreds of mediocrities, such as we send forth from year to year, will do less for the solid credit of our colleges and the higher learning of our country, than a dozen distinguished scholars annually produced. We do not wish to form a *learned class*, but to make a large *class learned;* and, while we maintain simultaneous training for all, to provide extra teaching for those who desire to avail themselves of it; to encourage the *few*, and to start them on the road to raise their own fame, and revivify the withered bays of our academical institutions.

This defect, which we have endeavoured to illustrate, was many years ago felt by Mr Pillans, to whom the education of our country owes so much; and, with his wonted good sense and educational chivalry, he sought to remedy it, so far as individual exertion could, by adopting a system of "private studies," to encourage the cultivation of the higher classical authors. The extension and public acknowledgment of this extra private course, which is more or less adopted by different professors, are the objects which we desire to urge in the *Remedy* now to be brought forward.

To meet the wants of our alumni, as above set forth, *let two parallel courses of study be prescribed in the several classes of the Arts' curriculum; one* for all students, without distinction or exception; and *the other*, an entirely optional course, for the small aristocracy of which we have spoken.[1] To render this course effective for good, three things are necessary: 1*st*, That prizes for excellence be provided; 2*d*, That additional examinations be instituted, at which the volunteers shall compete among themselves for honours of first and second grade; and 3*d*, That these candidates for honours be separately lectured by the professor as often (say once) in the week as shall be found necessary to overtake the work prescribed. Of such extra competitions there should be at least three during the year—one in January, on the subjects prescribed at the opening of the session; another at the end of the session, on subjects prescribed in January; and a third in the end of October, on subjects prescribed at the conclusion of the session for summer reading. At all these competitions rewards should be given; books or money once a year, and parchment certificates on the two other occasions. But this extra course, with its examinations and prizes, must become a regular and important part of the University system in every branch of study; and *eclat* must be added to it by the weight of University promulgation, the solemnity and dignity of University sanction, the honours of the University seal, and the glory of publicity, ere those results can be looked for which such an arrangement is calculated to secure. The exertions of an individual professor, however enthusiastic, will not suffice to call forth that zealous and unwearying toil which the dignity of a public hall, and the honour of a public prize, with the countenance of patrons and senatus, and newspaper publicity will readily produce and steadily maintain. None but parties closely interested ever dream of wading through our gigantic prize lists; but were a *few* names recurring several times during the year, as the honour men of their class, they would become "household words," and this circumstance alone would prove a great stimulus to those who depend for support on their own exertions, and, in fact, to all who are influenced by the love of approbation in even a small degree. To pushing men it is of the utmost importance to make for themselves a *college character*, which is certain to follow them to the bar, to the pulpit, and to the consulting-room; and, therefore, we fear not but that self-interest would soon swell the ranks of the aspirants for honours, and of the well prepared entrants, and thus raise the standard of admission and of teaching.

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[1] Thus, while the Professor of Greek reads with his entire junior class during the first three months a portion of Xenophon's Anabasis, he might, at a separate meeting, prelect to his volunteers a play of Euripides, directing them to read, as collateral helps, such works, or portions of works, on history, philology, and criticism, as he might deem most appropriate companions to the text-book, and most suitable to the advancement and capacity of the class. During the latter three months a similar course might be adopted, and so also in the different classes of Latin and Greek. The Professor of Mathematics, again, while confining his *polloi* to Euclid, Algebra, and Plane Trigonometry, could exercise the better students with Analytic Geometry, higher Algebra, and Spherical Trigonometry, or other desirable subjects. We give these examples not as the best to be adopted, but to illustrate our idea.

Many advantages besides that of extended reading and more copious information, would flow from the extra course. In the classical department our students would be early compelled to devote their attention to such collateral and illustrative works as the history of Grecian and of Roman literature, by Müller, Mure, Grote, Arnold, Dunlop, and Browne; to the extended grammatical and critical labours of Buttmann, Madvig, Kühner, Zumpt, Donaldson, and Key, etc.; and they would thus be instructed in those very topics in which they invariably fail when brought into competition with English trained alumni. There are no tutors like these; and it is manifestly our duty to adopt *that* tutorial system as soon as possible. The system of "extra" should be vigorously continued through all the branches of the Arts' curriculum, and all the years of the undergraduate course, so that students should not only have an opportunity, but even be under the necessity, of keeping up for degree examinations, outdoor competitions, or special professional studies, the information acquired in successive years, and that young men might be encouraged to follow out with exhaustive reading the subjects which have been chosen as their forte. But further—our schools would soon, under the operation of this system, be manned by scholars of a higher tone, whose influence would make itself felt on primary education generally, and on college entrants especially; and in a very few years the elementary teaching so much complained of would be abandoned, and the junior Latin and Greek classes might with safety be given up. The summer recess, too, would be turned to the best account, because being terminated as proposed by one of the three extra competitions, as well as a pass examination for all entrants, whether joining for the first time, or rising to a higher class, it would be very generally employed to mature and extend past acquisitions, or to prepare for the higher struggles of the coming ordeal. What a ready and satisfactory means, moreover, would thus be afforded for preparing a thoroughly qualified staff of assistant professors (we do not like the term tutors) for the working of the college classes, and what activity and vigour would be infused into University life!

Some may fear that this forcing process would introduce a system of cramming and grinding, which it is of the utmost moment to discourage. But it is entirely in the power of the professors and examiners to prevent such a result; or at worst to make the "grinders" co-operate with them for good. By variety of question, a systematic process in examination, a change in subject, and a freshness in illustration, the teacher may completely baffle the arts of any dealer in "crack questions," who may seek to establish himself as the vendor of passports to honours and prizes. But to prevent abuse, care should be taken that none be allowed to compete in the extra course, who are not more than respectable in the regular class, and that each examination paper be composed partly from the *polloi*, and partly from the optional, course, in order that the primary duty of all be not neglected by the *few*. For this reason alone, with the fear that a body of non-professional examiners would soon call into existence a system of "coaching," we again remonstrate against the idea of handing over to others the examining power of the professors.

Of the help to professors in discharging their increased duties we shall speak immediately. Meantime, it may be stated generally, that the extra labour will not, after the first year, be so great as might be supposed; and that a single individual may effect much if the examinations be judiciously arranged, and if he spend honestly the months of his long vacation. The expense of books and the overwork of students compelling them to refrain from private tuition, are but petty considerations when weighed against the immense benefits which would accrue to all, from the increased labour and extended range; and we trust that no "pity the sorrows" argument will interfere with a trial of these new appliances. That all the members of a community should be self-supporting at the first possible moment, is a sound principle of political economy; and we should be loth to interfere with its action in the case of University students; but we prefer to find that time and energy which are spent on private tuition devoted to the gaining of bursaries and scholarships; and, therefore, we should gladly see all such prizes thrown open to public contest, and a still greater number founded by patriotic testators.

Such are the main features of the proposed remedy. It will be seen that we keep in view the great excellence of our Scottish system—the admission of all, the professorial teaching of all, the thorough drill of all, and lastly, the adaptation of the teaching to all degrees of advancement; while, at the same time, we make provision for carrying higher in their studies that small aristocracy of talent who are able and willing to earn for themselves bays of a fresher green than now adorn the brows of the laureated few.

Were the scheme which we have sketched adopted, it would be necessary to render the Professors of Latin, Greek, Mathematics, and Natural Philosophy, some assistance in the discharge of the increased duties thus thrown upon them. The correcting of version exercises by the classical professors in their leisure hours we consider a useless waste of valuable time. That students should practise original composition is highly necessary, and that their efforts should be criticised by one of superior learning is also highly necessary; but one hour per week spent in open class in the criticism of a few exercises, varying in excellence, will accomplish more ultimate good than daily versions quietly returned to the writers with the amendments of the pencil. But composition in Latin and Greek must be made an integral part of all competitions, whether ordinary or bursary, before it be attended to with that zeal which it demands. When its importance has been publicly acknowledged by gaining prominence in examinations, then we shall secure its cultivation in private by all those to whom such an exercise is likely to prove of lasting service. In correcting exercises, therefore, the classical professors should require no help; and in drilling up incapables of the first year they should be equally free from obligation; but one or two thoroughly good scholars associated with each professor would render immense service to the cause of learning, if their efforts were judiciously directed. The assistant professors should aid in the examinations, and should afford occasional relief to the professor in the lecture rooms; but one of their main duties should be to meet, say twice a-week, with the volunteers of each class, to go over minutely with them the ground which the professor is to pass rapidly in review on the day of his separate prelection. But we must not for a moment countenance the proposal that a professor should hand over to the almost entire charge of his deputy any one of the regular classes of the *polloi* course. If a professor's preparations be largely made in the summer recess, as they ought, his winter labours will be as light as those of professional men generally; for, according to our scheme, we should not employ him more than four hours per day in the work of public teaching. Let us on no account, however, abandon or curtail the functions of our time-honoured, character-moulding, and judgment-directing professoriate, but cling to it as a means of instruction, which, though producing few *learned* men, has yet sent forth a very large number of practically valuable members of society. Let our aim be to give to all the benefits of our present system, while to the few we afford, in addition, the means of being not only intellectually trained, but also deeply learned.

The assistant professors, or Fellows as they might be called, should be chosen from the most distinguished graduates; and he who had taken the highest degree in each department, should have the first offer of any vacancy in the tutorship connected with that department. The tenure of office should be limited, so that the benefits of the assistantship should be enjoyed as widely as possible.

The establishment of additional chairs is another of those reforms which have been urged with much importunity in the demand for extension. With this cry, so far as it applies to the Arts' curriculum, we cannot largely sympathise, though in the Faculties of Divinity and Law there is certainly room for increased power. What we mainly want, however, is that our present chairs be more vigorously worked by some such plan as we have already adverted to. The difficulty which lies in the way of additional chairs is of a practical kind,—where to get the students to support, or even *encourage,* the new incumbents, and how such students could afford the necessary leisure from more pressing calls. A Latham or a Craik in the chair of English Language and Literature, would, doubtless, be a great acquisition, for our philological wants are but too plainly perceptible; and though the pupils of our high schools and better academies might dispense with such a class, still the large majority of students could not obtain, amidst the distractions of a country school, an adequate knowledge of this important department of learning. As an adjunct or supplement to the philological teaching of the classical professors, a dissection of our mother tongue would be in the highest degree desirable; and the advantages of a systematic study of our standard authors under a competent guide are too palpable to require enforcement. A thorough knowledge, however, of English literature is the labour of many years and the result of patient study. Lectures on Political and Social History might not inappropriately issue from the English Literature Chair; while the present absurd arrangement of imposing Natural History, in almost all its branches, on one pair of shoulders, might, with the greatest benefit to science, give way to the division of the subject into two departments.

A Professorship of Classical Literature, as supplementary to the present staff, would be rendered perfectly unnecessary by the system of "extra" which we have suggested; while a chair of Political Economy could be most advantageously combined with that of Ethics, a small additional endowment being provided to remunerate and encourage increased labour on the part of the professor. We can easily afford to ignore modern languages in the Arts' curriculum; if such a subject were made imperative, it would prove an incubus to the college and a burden to the students; if not, the chair would be well nigh a sinecure. Modern languages are equally well gained out of doors, and at a season when more urgent engagements do not interfere. There is one chair, however, the necessity for which is so strong, and the advantages so evident, that we can scarcely conceive how its claims have been overlooked in the many schemes of extension which have been broached, from time to time, we mean that of Pædeutics, or the "Art and Science of Education." The Medical Faculty is, in all our colleges, more or less fully equipped for conveying both theoretical knowledge and practical experience; the doctrines, principles, and technicalities of divinity and law have, to some extent, received suitable expositors; but the Teaching Profession, though yielding to none of these in the influence which it exerts for the well being of society, has been completely ignored.[1] Teaching, in fact, is too generally viewed as incapable of being scientifically treated; and when spoken of, is regarded rather as an art, or "knack," than as a practical science reducible to rules. But a very little reflection will suffice to show, that this is a grand mistake, and that the want of such a chair in one or more of our colleges has been a most grievous omission.

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[1] We rejoice to learn that a subscription has been auspiciously begun to endow such a chair in Edinburgh or Glasgow, and we wish the promoters of the scheme God speed. There should be two chairs of Pædeutics in Scotland, one in Edinburgh or Glasgow, and the other in Aberdeen.

Mental Philosophy and the modes of mental culture are as evidently co-related as the principles of chemistry and the practice of agriculture, or as the doctrines of physiology and the application of curatives; and deduction is as legitimate in the one case as in the other. But experience and reflection are necessary to trace the connection of the parts and point out the bearing of one upon another. The diagnosis of mental peculiarities in the young is a matter of no small difficulty, and unless accurately made, the means used will be as powerless to the end, as the application of a mistaken drug to the removal of a disease. Hence hundreds of youths of respectable scholarship go forth from the Arts' course as teachers, who are lamentably unsuited for the arduous duties they have undertaken; and a most serious bar is thus presented to the improvement of our methods of tuition—and at the same time, the rights of the teaching body to be elevated to the rank of a distinct and recognised profession fail to be acknowledged. Without such a chair Normal Schools are but the strongholds of an unreasoning empiricism; but when attached to a lectureship of Pædeutics, as a hospital to the Medical School, they may be made a most powerful engine for the improvement of education. Were our teachers compelled to graduate, attending for one year during their course the Professor of Pædeutics, and practising in the Normal Schools, what an improvement would it be on the miserable system of apprentice teaching!

We would further advocate, that a fixed course be prescribed for all aspirants to degrees, and that regular students be not permitted to use their discretion in selecting their classes from year to year. The practical inconveniences of this irregular method are very great, while theoretical objections to it will occur to all, based on psychological considerations, and on the mutual connection and coherence of the several subjects in their matter, and in their use as instruments of mental discipline.

Having thus discussed the arrangements of the undergraduate course, we conclude our survey by a few words on the conferring of laureate honours. A degree, at the conclusion of an academical career, is simply a token, that he upon whom it is conferred has attended college for a specified time, and has manifested moderate industry and respectable behaviour. It is not advisable, for many reasons, that the mere pass degree should exceed this limited amount of requirement, or that a separate form of diploma should exist for the graduates of different attainments. But it is of the utmost importance, that on the point of stepping from University scenes to the bustle of professional life, the industrious and accomplished students should have an opportunity of showing to the world what their diligence has been, what their powers are, and what confidence may be for the future placed in their abilities and application. A competition at graduation is, therefore, imperatively called for, to act as a stimulus throughout the undergraduate course, and to afford students an opportunity of gaining for themselves a testimonial of the most unexceptionable kind. A pecuniary reward is not necessary to call forth prime talent, as the Cambridge wranglerships show; but as a First Wrangler is sure of a Fellowship from his college, so we might hold out to our highest graduates Assistantships, Travelling Bachelorships, or other valuable advantages. For the *polloi*, it is highly necessary that the whole weight of the degree examination should not rest on one effort, but that the trial be either distributed over the four years, as at Aberdeen,[1] or that it be divided into a "little go," at the end of the second year, and a "great go," at the end of the fourth. Besides this, however, let there be an extended course for graduation with honours, as the crowning struggle of the extra course; and here the admirable plan pursued in Glasgow may be taken as a model. All the subjects of the curriculum should be kept up till graduation, by one yearly examination on a prescribed text-book, after the student has ceased to attend lectures on that branch; and thus time would ultimately be saved, as it is much easier to keep up knowledge by doing a little, than to recall it after an interval. That something must be done, and that speedily, to increase the respectability of our degrees, is admitted on all hands; and to discover the best means of effecting this object, we must seek the causes which have led to their depreciation. These we conceive to be as follows:—1*st*, It has been well known in England and Ireland, that students may enter the Scottish colleges at a very early age, and with almost no preparation; and that ten months at Latin, ten at Greek, and ten at mathematics, are sufficient for the degree of A.M., while three or four years' study of each of these departments, after a lengthened preparatory training, secures for English and Irish students only the designation of A.B., the higher title of A.M. not being procurable for three years longer. 2*d*, The value of our degrees is not known, either at home or abroad, since the papers by which candidates are tested are never seen beyond the college walls. Were the papers published to the world, as in Oxford, Cambridge, and Dublin, our professors might then afford to test the qualifications of their own pupils without being subject to the inuendos of unreflecting agitators. 3*d*, The practice of selling degrees, once so largely prevalent, has had the effect of depreciating our honours, perhaps more than any other individual cause. The opinion which, in this country, we entertain of German Ph.D.'s conferred on

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[1] This lightening of the degree examination has the effect of increasing the number of graduates, for as the toil comes in *eight* instalments, two each year, the *pass* is a matter of no great difficulty. There are many evident drawbacks, however, to the Aberdeen plan, though we consider it the best in Scotland.

Englishmen, will afford some estimate of what effect the indiscriminate sale of Scottish degrees has had on the foreign value of these distinctions. To restore our respectability in this respect, we must make our higher degrees a *bona fide* test of superior scholarship, not only by a final effort, but by a sustained struggle and extra reading throughout the whole course; we must publish our examination papers to the world; and we must abandon the degrading and humiliating practice of lavishing degrees on aliens, and selling the birthright of our sons for a mess of pottage. At the end of the course, no degree above A.B. should be conferred —A.M., and those of higher rank being obtainable by time and by an examination merely formal; no degree should be conferred by a college, except on her own alumni (we, of course allow LL.D.'s to princes and warriors): and no degree should be conferred on an absent individual. If these simple rules be observed, our degrees will soon be at a premium in the literary exchange, and will be greedily sought after as passports to honour and emolument.

We have thus sketched a plan for the improvement and extension of our colleges; and in so doing, have endeavoured to preserve intact our characteristic excellences, and to recommend modifications of present appliances rather than to advocate foreign innovations. An entrance course for Greek and Latin is a mere extension of the principle which, tacitly acted on by all, insures a moderate amount of Latin reading before matriculation; periodical examinations at the beginning and the end of each session are already held, and that with the best results, in Aberdeen. An extra course, with extra prizes and competitions, is a mere enlargement of the system of "Private Studies," as encouraged by some professors; assistant professors have for some time been employed in various classes, and we only seek to direct their efforts to greater advantage; additional chairs are called for by all, and so far, are a most reasonable *extension;* a fixed course is the rule in some of our colleges; and, lastly, competition for high degrees has long been the practice in Edinburgh and Glasgow, and more recently in King's College, Aberdeen. On the other hand, while maintaining similarity in outward forms, we have not sought to suggest alterations in the modes of teaching, for we advocate the maintenance in full, nay, increased force, of the rigid drill and moulding discipline of the professorial apparatus. We have, moreover, indicated a plan whereby the majority of the entrants may be so tested, as that higher classical attainments shall be secured on admission to the university, and the schools of the country reflexively raised; while we have nevertheless shown, that none need be excluded, and that the *seri-studiorum* and mere amateurs may have their feelings spared and their literary cravings satisfied without serious detriment to the cause of learning.

ART. V.—1. *The Physical Geography of the Sea.* By M. F. MAURY, LL.D., U. S. N., Superintendent of the National Observatory. An entirely New Edition (6th), with Addenda. New York, 1857. With 13 Plates, pp. 384.

2. *Maury's Sailing Directions.* 7th Edition. February 1857. Pp. 870.
3. *Report of the Meteorological Department of the Board of Trade*, 1857.
4. *First and Second Reports of the Liverpool Compass Committee to the Board of Trade, with Letters from the* ASTRONOMER ROYAL *thereupon.* London, 1857.
5. *Instructions for Correcting the Deviation of the Compass.* Edited by ARCHIBALD SMITH, Esq., M.A., F.R.S., late Fellow of Trinity College, Cambridge. London 1857.
6. *Swinging Ships for Deviation.* London, 1857.
7. *Weather Book; Abstract of Log and Meteorological Register.* Issued by the Board of Trade.
8. *First Number of Meteorological Papers.* Published by Authority of the Board of Trade. London, 1857.
9. *Wind Charts.* Published by the Board of Trade.
10. *Great Circle Sailing.* Published by the Board of Trade.
11. *The Principles of Great Circle and Composite Sailing.* By JOHN THOMAS TOWSON. Printed for Private Circulation. Liverpool, 1857.
12. *Translation of Dutch Pamphlets on the Herring Fishery.* London, 1858.
13. *Meteorological Register kept by the* EARL OF GIFFORD, *in his Yacht "Fair Rosamond," in* 1857. London, 1857. Issued by the Board of Trade.
14. *The Log of a Merchant Officer viewed with reference to the Education of Young Officers, and the Youth of the Merchant Service.* By ROBERT METHVEN, Commander in the Peninsular and Oriental Company. London, 1854.

"THE GEOGRAPHY OF THE SEA."[1]—What an incongruous idea do these words present to the scholar! How thoroughly incomprehensible by the ordinary mind! Considering the ocean as but the great reservoir for receiving the superfluous waters of the earth, as the nursery of the whale and its congeners, or as the dreaded grave of the seafaring man, we have seldom regarded it under its nobler phase, as the common highway of nations, which even despotism cannot appropriate, and as an essential part of the complex terraqueous apparatus which constitutes "The Life of the Earth."

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[1] Humboldt has given this name to what he justly regards as a new department of science.

From the earliest times, before the sailor trusted himself to the open sea, a certain degree of knowledge of the tides and the winds was required for the safe navigation of his shores; but when he adventured across the Atlantic, or into the bosom of the Indian and Pacific Oceans, or attempted to circumnavigate the globe, and reach its ice-bound poles, seamanship more advanced, and science more profound, were required. The currents in the atmosphere, the trade winds and monsoons, the belts of calm, tropical and equatorial, the hurricanes and tornadoes of the torrid zone, the thunder storms, and the air and waterspouts of southern climates, perpetually distract the mariner in his course, and demand from him all the skill which can be derived from science and experience. Nor are the currents of the ocean less amenable to inquiry, and less formidable to the seaman than those of the atmosphere. The two Gulf Streams of the Northern and Southern Hemispheres, the currents from the Poles to the Equator, and from the Equator to the Poles, and the bores and tidal waves of the East, perform important functions in our terraqueous world, and are only now revealing to science their origin and their laws.

The study, therefore, of the sea, of its geography, its movements, and its physical condition, while it presents to the general reader topics at once popular and instructive, affords to the philosopher a rich and boundless field of research, and must eventually promote the highest interests of humanity and civilization. As a new department of science, it has already excited the notice of every nation in the Old and New World; and societies and governments are actively employed in promoting the various inquiries which it demands, in order to shorten the voyages to distant lands, to guard life and property which are risked at sea, and to advance those branches of knowledge which are associated with winds and waves, and embrace that profusion of life of which the sea is the nursery and the grave. A brief history, therefore, of what has already been accomplished in this great enterprise, may be useful to some of our readers, and we trust may be made interesting and instructive to all.

It would be a difficult task, and one not necessary to our present purpose, to give an account of the delays and dangers to which the navigator is exposed in those remote seas which have been comparatively little visited by European or transatlantic communities. It will be sufficient to refer to the Atlantic Ocean, the great common of civilisation, which is covered, at every season of the year, with thousands of vessels, intercarrying the produce of the old and new worlds, and freighted with so many precious lives. The grand and peculiar feature of the Atlantic is the GULF STREAM, which till recently has been regarded by the seaman as a serious obstruction in his course. Ignorant of its strength and limits, his vessel was often drifted many miles out of its course, and the length of his voyage greatly extended.[1] Before the high temperature of this current was ascertained, a voyage from Europe to New England and New York, and even so far south as Cape Chesapeak, was both difficult and dangerous. In approaching the American coast, vessels were beset with snow storms and gales, which baffled the strength and skill of the seaman. His bark became a mass of ice, her crew frosted and helpless, and "she remained obedient only to her helm, and was kept away for the Gulf Stream." On reaching its edge, she passed from a wintry sea into one at summer heat. The ice disappeared from the ship, and "the sailor bathed his stiffened limbs in the tepid waters of the stream;" but in attempting again to "make his port," he is driven back from the north-west, and exposed to the dangers which he had surmounted. In gales of this kind many ships annually founder; and there are numerous instances in which vessels, with their crews enervated in tropical climates, have encountered, near the capes of Virginia, snow storms which have driven them back, again and again, into the Gulf Stream, and prevented them from making an anchorage, for fifty or sixty days. In mid-winter, the number of wrecks and the loss of life, along the Atlantic sea front, was frightful. Sometimes, in the month's average, the wrecks amounted to three a day; and vessels which escaped this calamity, were blown off and obliged to take refuge in the West Indies, where they remained till spring, before they could venture to approach the inhospitable coast.

The Gulf Stream, to which these calamities were due, has, by the agency of science, become a boon to navigation. In 1770, when Dr Franklin was in London, he learned the curious fact, that the Falmouth packets to Boston arrived a fortnight later than the trading vessels from London to Rhode Island, although the distance was much less. Captain Folger, a Nantucket whaler, then in London, explained to the Doctor this singular anomaly. The Rhode Island captain was acquainted with the high temperature and great velocity of the Gulf Stream, and turned it to account, not only as a refuge from the snow-storms, and as a land-mark or beacon for the coast in all weathers, but as a means of shortening their voyage. The English captains, ignorant of the properties of the current, kept their ships in it, and were set back sixty or seventy miles a day. Dr Franklin viewed the discovery of the high temperature of the Gulf Stream as of such importance that he ungenerously, we think, kept it a secret, as if it was a solution of the great problem of finding the longitude at sea, for which a reward, similar to that given to Harrison, might be claimed.[1] Vessels having often been 5° and even 10° out of their reckoning, it was naturally thought to be a solution of the problem of the longitude, "for, on approaching the coast," as our author observes, "the current of warm water in the Gulf Stream, and of cold water on this side of it, if tried with the thermometer, would enable the mariner to judge with great certainty, and in the event of hazy weather, as to his position." Although this important discovery was made in 1775, it was not generally made known till 1790, when Dr Franklin published his work on *Thermometrical Navigation.* Its beneficial employment in navigation was immediate. The northern ports of America were as accessible in winter as in summer; and there seems to be no doubt that it was then the cause of the great decline which took place in the trade of the two Carolinas, "Charlestown, the great southern emporium of that day, being removed from its position as a half-way house, and placed in the category of an outside station."

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[1] In his passage a few years ago from Sierra Leone to New York, General Sabine was drifted 1600 miles off his way by the force of currents alone.

In consequence of the great boon obtained for navigation by the study of the Gulf Stream, Lieutenant Maury, a distinguished officer in the United States navy, was led to collect from the captains of the mercantile marine all the facts which they had observed respecting the winds, tides, currents, and temperature of the ocean. After a careful examination of them, he published the results at which he arrived, in his volume, entitled, "The Wind and Current Charts," a work which has, to an extraordinary extent, shortened and rendered safe voyages that had always been long and perilous. By the use of his charts and sailing directions, the average passage from England to Australia has been reduced from 125 to 97 days, the homeward passage having been once made in 63 days! The passage from New York to California has, in like manner, been reduced from 183 to 135 days. The benefits thus conferred on every maritime nation were so obvious, that their respective governments, at the desire of Lieutenant Maury, were induced to take an interest in the subject, and to send qualified persons to discuss it at a general conference. Representatives from England, France, Russia, Sweden, Norway, Holland, Denmark, Belgium, Portugal, and the United States, accordingly met in Brussels on the 23d August 1853, and adopted a system of observations to be made on board all their vessels. Spain, Prussia, Sardinia, the Holy See, Austria, Brazil, the republics of Bremen and Chili, and the free city of Hamburg, subsequently offered their co-operation in the same plan; and the sea is now crowded with observers, who will carry on their researches in war as well as in peace. In the event of any of these vessels being captured by an enemy, it has been arranged that the journal containing the observations, shall be held sacred; and we trust that this union of nations to promote the common interests of humanity and commerce may lead to a more glorious combination to cultivate only the arts of peace. In reducing to law the elements which disturb the ocean, and in subjugating the rebellious powers which are so fatally at play in the physical world, there is work enough to exhaust all the resources of the state, and to call forth all the skill and heroism of its servants. In this peaceful strife, where conquests more valuable than kingdoms, are the prize, the command to love our neighbour is never broken, and fame, the reward of victory, is as enduring as time and as noble as virtue.

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[1] Mr Maury says that Dr Franklin concealed his discovery for a while "through political considerations;" but his observations on the longitude problem indicates clearly that the motives of the Doctor must have been of a personal kind, for no consideration could be called political which withheld from the American navigator the means of saving himself from shipwreck, and from the American merchant the rapid and safe conveyance of his property.

After the Report of the Brussels Conference had been laid before Parliament, a grant of money was made for the purchase of instruments, and the discussion of observations, and a department of the Board of Trade, under Rear-Admiral Fitzroy, was charged with the important task of carrying into effect the contemplated arrangements. In order to assist the officers of the navy and the ship-masters who may agree to co-operate in this great work, forms of abstract logs have been prepared for men-of-war and merchantmen; and those who shall keep a journal of observations and results, and send an abstract of it to the National Observatory at Washington, will be furnished, free of cost, with a copy of Lieutenant Maury's Sailing Directions, and such sheets of the chart as relate to the cruising ground of the co-operator. The American shipmasters entered warmly into these views; and in a short time the captains of more than a thousand floating observatories, were engaged day and night, in every part of the ocean, in making and recording their observations. Since the meeting of the Brussels Conference, it has been proposed to extend this system of observations to the land, and thus to obtain from every inhabited part of the globe, a series of simultaneous observations on the weather, which cannot fail to advance the agricultural and sanitary interests of nations.

Our readers will understand from these details how Lieutenant

Maury was led to compose his treatise on the Physical Geography of the Sea,—a work of European importance, and one which cannot fail to interest and to instruct every class of readers.

After giving a description of the Gulf Stream, one of the most remarkable phenomena in the ocean, he treats, in eighteen chapters, of the influence of this great current on the climates of the north of Europe and America; of the atmosphere, with its storms, its land and sea breezes, its winds, and their geological agency; the relation between the circulation of the atmosphere and magnetism; the currents, salts, and depths of the ocean; the equatorial cloud-ring and colour belts; the red fogs and sea-cloud; the climates of the ocean; the drift of the sea; the routes across it; the basins of the Atlantic; and the open sea in the Arctic regions.

The Gulf Stream is a river in the ocean, which never overflows in the mightiest floods, and is never dried up in the severest droughts. Its current consists of warm, and its banks and bottom of cold, water. It has its origin in the Gulf of Mexico, and its embouchure in the Arctic Seas. Though a thousand times greater in volume, it flows with a velocity greater than the Mississippi or the Amazon. The colour of the stream is indigo blue;[1] and so definite is its line of junction with the common sea-water, that one-half of a ship may be in blue, and the other in colourless, water.

The cause of the Gulf Stream has long been a problem among hydrographers; and even with all the light that Lieutenant Maury has thrown upon it, we can hardly consider it as solved. Dr Franklin was of opinion that the Gulf Stream is the escaping of the waters that are constantly forced into the Caribbean Sea by the trade winds; and that the water thus pressed up, as it were, into a head, gives the current its velocity. While Lieutenant Maury admits it as a fact, that the trade winds skim the Atlantic of the water that has supplied them with vapour, and thus drive a salter current into the Carribean Sea; he regards the causes as unknown why it escapes by the channel of the Gulf Stream in preference to any other. In addition to the action of the trade winds, he conceives that there are two causes in operation which may explain the Gulf Stream,—one the increased saltness of the water driven into the Caribbean

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[1] As the Gulf Stream contains 4 per cent. of salt, a larger quantity than common sea water, Lieutenant Maury is of opinion that its indigo blue colour is owing to this cause. The same observer, however, who measured the saltness of the Gulf Stream, found that there was 4½ per cent. of salt in the sea of the trade wind regions; but we are not told that the *blue* colour is there more rich and intense. We believe that blue is the colour of *pure water*, and is not produced by the salt which it contains. The green colour of other seas arises from the yellow produced by vegetable matter. There is no more salt, if any at all, in the blue Rhone, than in the green waters of the Rhine.

Sea, and the other the small quantity of salt in the Baltic and Northern Seas. The heavy, or salter water, will therefore flow into the region where it is fresher and lighter. But the temperature of the Gulf Stream is often 20° and even 30° higher than that of the ocean; and as water expands with heat, the difference of weight produced by difference of saltness may be thus more than compensated, and the waters of the Gulf Stream be lighter than those of the ocean. If lighter, then they must occupy a higher level than the waters through which they flow; assuming the shape of a roof, or a double inclined plane, from which water will run down on either side,—cold water running in at the bottom, raising up the cold water bed of the Gulf Stream, and making it shallower in its progress northward. That this is the constitution of this remarkable current, has been placed beyond a doubt. Boats in or near the centre, or axis, of the stream, invariably drift to one side or other. Sea-weed (*fucus natans*) and drift-wood appear in large quantities on the *outer* edge of the stream. Very little sea-weed and drift-wood is found on the eastern edge of it; and its accumulation on its western edge, is ascribed by our author to the diurnal rotation of the earth.

In its course northward, the Gulf Stream tends more and more to the east, till, at the banks of Newfoundland, it is almost easterly. Its warm waters here melt the icebergs from the Arctic seas, which deposit the rocks, the earth, and the gravel which they bore, thus forming banks at the bottom of the ocean. From this locality the stream flows, in a state of increasing expansion, to the British Islands, to the North Sea, and the Frozen Ocean, passing along the east and west coasts of Greenland, and modifying, perhaps to some small extent, the climate of these inhospitable regions. When the Gulf Stream leaves the United States, it varies its position with the seasons; its northern limit, as it passes the south-east extremity of Newfoundland, being in lat. 40° 30′ in winter, and in lat. 45° 30′ in September, when the sea is hottest. This oscillatory motion arises from the inequal density of the waters on each side of it—at one time pressed to the right, and at another to the left, according to the seasons of the year, and the consequent changes of temperature in the sea.

The great mass of water which constitutes the Gulf Stream, has a variety of temperatures. The hottest portion is at or near the surface, the heat diminishing downwards to the bottom of the current,[1] which never reaches the bottom, there being always a curtain of cool water between the stream and the solid earth beneath. The object of this arrangement, according to Lieutenant

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[1] The temperature of the surface water at Cape Hatteras, in N. lat. 35° 13′, and W. long. 75° 30′, is about 80°, and 57° at the depth of 3000 feet.

Maury, is to carry the stream warm to France, Great Britain, and the West of Europe, by making it pass over the non-conducting cold water at the bottom. Had the stream rushed over the solid crust of the earth, which is comparatively a good conductor, it would have lost much of its heat before it reached the West of Europe, and, we may add, it would have been greatly obstructed in its motion. We can hardly agree with our author, when he says, "that, but for this arrangement, the soft climates of both France and England would be as that of Labrador, severe in the extreme, and icebound."

But it is not merely in its vertical direction that the temperature of the Gulf Stream varies. The heat of the current will of course diminish from its middle to its edges, but we were not prepared to expect that it consisted of threads of warm, alternating with threads of colder water; so that, in sailing across it from America, there is "a remarkable series of thermometrical elevations and depressions on the surface temperature of this mighty river in the sea."

In treating of the influence of the Gulf Stream upon climates, our author regards it as a portion of a great heating apparatus, similar to the hot water apparatus which is used for heating our dwellings: the Torrid Zone is the furnace, the Mexican Gulf and the Caribbean Sea the cauldrons, the Gulf Stream the conducting pipe. "From the banks of Newfoundland to the shores of Europe is the basement—the hot air chamber in which this pipe is flared out, so as to present a large cooling surface. Here the circulation of the atmosphere is arranged by nature; and it is such, that the warmth thus conveyed into this warm air chamber of mid-ocean is taken up by the genial west winds, and dispersed, in the most benign manner, throughout Great Britain and the West of Europe." In support of these views, our author informs us, that the maximum temperature of the Gulf Stream is 86°, or about 9° above the ocean temperature; that it loses 2° by an increase of 10° of latitude; and that, after running 3000 miles northward, it still preserves, in winter, the heat of summer, and in this state crosses the 40° of north latitude. Here it overflows its liquid banks, and spreads itself for thousands of square leagues, over the cold waters around—"covering the ocean with a mantle of warmth," and carrying with it a mild and moist atmosphere, which mitigates in Europe the rigours of winter, and extends its genial influence even into the polar basin of Spitzbergen. Ireland, says Lieutenant Maury, is thus made the "Emerald Isle of the Sea," and the shores of Britain clothed with evergreen robes, while, in the same latitude, Labrador is fast bound in ice.

But while the Gulf Stream is thus generous to the North of

Europe, its beneficial influences are felt in the South. The cold waters from the North descend towards the Equator, and moderate the burning climates in the Caribbean Sea, and round the Gulf of Mexico. These cold currents bring along with them the fish of the northern seas, and thus give the inhabitants of the South a supply of fish far superior to that which is bred in their heated waters. The fish of warm climates, though beautiful and gorgeous in their colours, are soft and unfit for table; while in the current of cold water in the Pacific, called *Humboldt's Current*, which sweeps the shores of Chili, Peru, and Columbia, and reaches even the Gallipagos Islands, under the Line, there is throughout the whole of that distance an abundant supply of excellent fish. These cold and warm currents, therefore, are the great highways through which fishes travel from one region to another. The whale, it is well known, cannot exist in warm waters; but the medusæ, or sea nettles, its principal food, are bred in the warm seas of the South. From the Gulf of Mexico, the great nursery of these medusæ, the Gulf Stream carries them in shoals for thousands of miles, to feed the starving whale in its own gelid waters.[1]

One of the most remarkable properties of the Gulf Stream, is the influence which it exercises over the meteorology of the ocean. The most furious gales sweep along with it; and it is doubtless the cause of the fogs of Newfoundland, which are so dangerous to navigation in winter. Many gales have been traced to the Gulf Stream from their origin; and gales which rise on the coast of Africa, as far south as 10° or 15° of N. latitude, have been known to join it, and to travel with it, turning round to recross the Atlantic for the shores of Europe. Gales thus attracted to the Gulf Stream are the most terrific on the ocean, and their course is marked by the most serious disasters. In 1854 upwards of seventy vessels were wrecked, dismasted, or damaged, in one of these tornadoes; the current of the stream running in one direction, and the wind blowing in another, so as to create a sea of the most frightful kind. These storms are said to be, for the most part, rotatory ones, such as have been described by Piddington, Redfield, and Reid; but it is a question still to be settled, why these storms are attracted towards the Gulf Stream, and follow it in its course.

We have thus seen, under the guidance of our distinguished author, how the equatorial winds convey the heat over the waters of the tropics into the Northern Hemisphere, raising the temperature of the Atlantic, warming even the Arctic Seas, and therefore necessarily improving, to some extent, the climate of the West of Europe. We cannot, however, agree with Lieutenant Maury in regarding the Gulf Stream as the sole, or even the principal, cause of the temperature which characterises the warm meridian that passes through the West of Europe. In a former article,[1] relative to the distribution of heat over the globe, we have shown that there are in the Northern Hemisphere *two* poles of maximum cold—one in Canada, and another in Siberia; *two* meridians of maximum cold, passing nearly through the cold poles; and *two* of maximum heat, nearly at right angles to them. We have shown, also, that the two magnetic poles are nearly coincident with the poles of maximum cold; and we are therefore led to regard the earth as a great thermo-magnetic apparatus, in which the distribution of its temperature is regulated by internal or external causes, depending upon magnetic, galvanic, or chemical agencies. The difference between the temperatures in the same latitudes (13° in the lat. of 50°, and 17° in the lat. of 60°) on the cold and warm meridians, is too great to be produced by any genial currents in the ocean; and we can hardly conceive how even a much higher temperature than that of the Gulf Stream could, after its enormous diminution by the eastern expansion of the current, affect even the Northern Ocean to any marked extent. That it should affect the inland climates of the West of Europe, appears to us still more problematical. The variation of temperature in the warm European meridian, as the cosine of the latitude, indicates a cause of a more general nature than the intrusion of an oceanic current; and when we consider that this law is indicated also by the temperature of the earth,—of springs deeply-seated, and beyond the influence of superficial agencies,—we feel that we are not presumptuous in questioning the opinion, that the Gulf Stream, though it may influence, does not regulate the climate of the Northern Hemisphere.

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[1] Off the coast of Florida, shoals of young medusæ have been seen, thickly covering the sea for many leagues. A sea captain, bound to England, was five or six days in sailing through them. On his return, sixty days afterwards, he encountered the same shoal, and was three or four days in passing through it.

With the physical geography of the sea, the atmosphere of the earth has a necessary and an interesting connection. What the moon is to the tides, the atmosphere is to the ocean. We must study the character and condition of the one, in order to understand the motions and laws of the other. The air which surrounds the earth extends at least to the distance of fifty miles, growing thinner and thinner as it recedes. At the top of the highest mountains, it is scarcely sufficient to sustain life and to propagate sound. Though it presses upon every square inch of our bodies, we do not feel its influence. When at rest, we are sensible only to its heat or its cold. The aspen leaf rests on its stalk, and the spider's line glitters with the varied tints of the sun. The silence of death is broken only by the hum of life. Over this trance of nature a change speedily supervenes. The distant forest announces the approach of the tempest,—the oak and the pine are crushed by its power; the proudest monuments of human skill are levelled with the dust; and the slumbering ocean, chafed into fury, dashes the war-ship against its cliffs, or sinks it beneath its waves. Resting upon the stream, and lake, and sea, the porous air sucks up their waters in vapour, forms with it the fleecy or the watery cloud, and retains its precious charge till its service is demanded in rain or in dew, in hail or in snow. As the pabulum of life, the air of the atmosphere exercises still higher functions. It is the food of whatever breathes, the fuel of whatever burns, the essence of whatever grows, the spirit of whatever dies,—the soul, in short, of matter—its element when it exists, its residuum when it decays. It is only, however, in its relation to the geography of the sea, that we can treat of the functions of the atmosphere.

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[1] See Review of Humboldt's *Central Asia*, in vol. v., p. 491–503.

Between the parallels of latitude 30° N. and 30° S. of the equator, winds, called the *Trade Winds*, blow almost unceasingly. Those on the north of the equator blow from the north-east to the south-west; and those to the south of the equator from the south-east to the north-west. In their motions, the trade winds are as steady and constant as the current of a great river, always moving in the same direction, unless when they are occasionally turned aside by a desert to blow in *Monsoons*, or as *land* and *sea breezes*. The northern edge of the north-east trade winds is variable. In spring they are so near the equator, that they sometimes reach only to the parallel of 15°. As these two master currents of air are continually blowing from the poles to the equator, it necessarily follows that the air thus taken from the poles must be replaced by other air from the equator. This return current must, therefore, blow in the upper regions of the atmosphere, and opposite to the wind which it replaces. Had the earth been at rest, these winds—the *trade* and their return currents—would have moved from north to south, and from south to north; but in consequence of the rotation of the earth from west to east, both the direct and counter currents move in a direction intermediate between the two motions to which they are subject—namely, in south-easterly and south-westerly, and in north-easterly and north-westerly, directions. When the north-east trade winds meet the south-east ones at the equator, they produce a calm, thus forming the *belt of Equatorial calms*. In like manner, when the direct and return currents from the poles reach the parallel of 30°, they produce a belt of calms, which in the Northern Hemisphere are called the *calms of Cancer;* and in the Southern the *calms of Capricorn.* The breadth of the calms of Cancer, and also their limits, is variable. According to the season of the year, they oscillate between the parallels of 17° and 38° north.

Among the meteorological agencies of the atmosphere, its two greatest functions, according to Lieutenant Maury, are to distribute moisture over the surface of the earth, and to temper the climate of different latitudes. Having travelled obliquely over a large space of the ocean, the north-east and south-east trade winds are heavily laden with moisture when they meet in the belt of equatorial calms. The two currents being thus brought into collision, the air rises upwards, and expanding and cooling as it ascends, a portion of its vapour, thus condensed, descends in rains, which are sometimes so heavy and so constant, that, to use the language of old sailors, they "have scooped up fresh water from the surface of the sea." The waters thus taken up in vapour and precipitated during the collision of aerial currents, and the cold which accompanies them, supplies the great rivers of the world, which conduct them to the sea, to be again raised by the winds and breezes which blow upon its surface. As the great mass of the ocean lies in the Southern Hemisphere, it is a curious fact that the greatest quantity of rains, indicated by its rivers, falls in the Northern Hemisphere. In the Northern temperate zone, the annual fall of rain is "half as much again" as that in the South temperate zone;[1] and it is well known that the great water courses of the globe, and half the fresh water, is in the Northern Hemisphere.

In explaining this remarkable fact, Lieutenant Maury states that, in the late part of the autumn, winter, and early spring of the North, the sun is throwing an intense heat upon the seas of the Southern Hemishere, and therefore raising a mass of vapour into the upper regions of the atmosphere, from which it is carried in an upper current by the south-east trade winds, and set free by condensation in our northern winter. When this upper current reaches the calms of Cancer, it becomes the surface wind from the southward and westward, and, cooling as it goes north, the process of its condensation begins. Hence our author concludes that our rivers are supplied with their waters principally from the trade wind regions, and that this is the reason why the sea water in those regions contains more salt than elsewhere.[2]

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[1] According to Johnston's *Physical Atlas,* the annual average in the North is 36 inches, and only 26 in the South temperate zone.

[2] Lieutenant Maury has employed these views in determining the regions where no rain falls, those where it should be a maximum, and those where the climate should be the most equable. The rainless regions are on the coast of Peru, and about the Red Sea, and the Western Coasts of Mexico; and the Deserts of Africa, Asia, North America, and Australia, are almost rainless. The regions

The rivers of the Southern Hemisphere, for similar reasons, are supplied with their waters by the north-east trade winds; but as the evaporating surface—that is, the area of sea over which they blow—contains, between the parallels of 7° and 29° north, only 25,000,000 of square miles, while the evaporating surface in the Southern Hemisphere is 75,000,000, the quantity of rain which falls in the latter is comparatively small. The mean annual fall of rain, which is evaporated principally from the seas of the Torrid Zone, is estimated at about *five* feet. If we suppose it all to come from that zone, it would be equivalent to the waters of a lake 24,000 miles long, 3000 miles broad, and 16 feet deep! and this water is annually raised up into the sky, and brought down again by the exquisite, though complex, machinery of the atmosphere, "which never wears out nor breaks down, nor fails to do its work at the right time and in the right way."

In contemplating these wonderful arrangements, we see why the earth is round—why its mass and force of gravity is neither greater nor less than it is—why the proportion between the land and water is as we find it—why the existing capacity of the atmosphere for moisture has been adopted—and why the mountain ranges have their present height, and breadth, and form, and position. To understand these arrangements, or if beyond our capacity, to be convinced of their existence, is a privilege of no ordinary kind. If there is any part of the economy of the material world which seems to be inexplicable and without law, it is the weather, with its capricious changes and its ever varying and mysterious phenomena. Delayed with calms, or baffled with contrary winds—tossed upon a tempestuous sea, or dashed upon the cliffs of the ocean—deluged with a waterspout, or upset by an iceberg—lost in a fog, or struck by the lightning, the seafaring man can hardly believe that he is suffering under a system of beneficial adaptations necessary for his happiness and even his existence. Nor is the landsman less sceptical when he is personally thwarted in his plans—when his crops are inundated or levelled with the ground—his forests shattered or uprooted—his tender frame fevered with heat or with cold—and the circle

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of greatest rains are the abrupt slopes of those mountains which the trade winds first strike after having blown over the greatest area of the ocean. They occur in Patagonia and to the north of Oregon. The regions of equable climates are under the Equatorial calms, "where the N.E and S.E trade winds meet fresh from the ocean, and keep the temperature uniform under a canopy of perpetual clouds." Our author also explains why there is more rain on one side of a mountain than on the other. The Andes, for example, and other mountains which lie athwart the course of the winds, have a dry and a rainy side, the prevailing winds determining which is the rainy and which is the dry side—the weather side, or that on which the wind blows, being the wet, and the lee side the dry one.

which he loves smitten with famine or with pestilence. And yet he ought to know, and, if he does not know, he ought to learn, that these apparent evils are the workings of that complex machine, with its pinions of heat and air and water, which feeds and sustains every living thing in the animal and vegetable world. But though it is not difficult to comprehend this general truth, the philosopher is only beginning to understand some of the simpler processes which are under our daily observation; and we can hardly congratulate him on having discovered a single law which regulates the weather. While the astronomer, with his timepiece and his telescope, can predict and exhibit phenomena in the heavens invisible to the human eye, the most weatherwise sage, even with the barometer and thermometer in his hand, and the wind-gage in his view, dare not, without presumption, anticipate an hour of sunshine or a day of rain.

In his fourth chapter, Lieut. Maury treats of land and sea breezes, those alternating winds which proceed from the sea by day, and from the land by night. These breezes have their origin in the heating of the land by day, and its cooling by the radiation of its acquired heat during the night, though they are occasionally affected by other causes. Lieut. Jansen,[1] of the Dutch Navy, whose observations, couched in language too poetical for science, constitute the principal part of the chapter, is of opinion that electricity, rain, and other causes, have an influence on the regularity of the land breezes; and he goes so far as to conjecture, from very insufficient data, that the moon is also an agent, there being, as he avers, in several localities little land breeze at full moon, and little sea breeze at new moon.

Among the means of investigating the phenomena of the trade winds, our readers will hardly believe that the microscope has been highly instrumental. In several localities, showers of dust of a brick-red or cinnamon colour are precipitated in such quantities, as to cover the sails and riggings of vessels hundreds of miles from the land. These showers produce what the seaman calls "red fogs," or "sirocco," or "African dust," and they have enabled the meteorologist to establish as a fact, what had previously been the result of theory, that the north-east and south-east trade winds, after meeting and rising up in the Equatorial calms, take their observed paths, the south-east trades passing over into the Northern Hemisphere, and the north-east trades into the Southern Hemisphere. By examining the "sirocco or African dust," Ehrenberg found it to consist of infusorial animalcules, and organisms whose *habitat* is not Africa but the south-east trade wind region of South America. In the strikingly similar specimens from the Cape de Verd Islands, Malta, Genoa, Lyons, and the Tyrol, he recognised South American forms; so that they must have been carried by a perpetual upper current of air from South America to North Africa. The rain-dust, which, according to Humboldt, imparts a straw colour to the atmosphere, is of a brick-red or yellow-ochre colour when collected in parcels. It falls most frequently in spring or autumn, generally from thirty to sixty days after the equinoxes; and, in order to explain this, Ehrenberg supposes that "a dust-cloud is held constantly swimming in the atmosphere by continuous currents of air, and that it lies in the region of the trade winds, and suffers partial and periodical deviations." As this dust is probably taken up in the dry and not in the wet season, Lieut. Maury is disposed to believe that it comes from one place in the vernal, and from another in the autumnal equinox.

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[1] Jansen's Appendix to Lieut. Maury's *Physical Geography of the Sea*, translated from the Dutch by Mrs Dr Breed of Washington.

When the opposite trade winds meet in the Equatorial calms and rise up together, Lieut. Maury asks an important question. What makes them cross? What is the power which guides the northern trade to the south, and the southern to the north? And he proceeds to answer it in his *sixth* chapter, "On the probable relation between magnetism and the circulation of the atmosphere." The theory which our author here expounds is founded on the fine discovery of Dr Faraday, that oxygen gas, which forms one-fifth part of the atmosphere, is magnetic; that its magnetic force is diminished with heat, and that the atmosphere is a magnetic medium ever varying in its magnetic power by the influence of natural circumstances. From theory, and some observations by Passy and Bellot, he conceives that the atmospherical nodes, or calm regions, or poles of the wind,[1] are coincident with the north and south magnetic poles, and also with the poles of maximum cold discovered by Sir David Brewster;[2] and he considers that there is such a physical connection among these three poles as to indicate a corresponding relation between magnetism and the circulation of the atmosphere. "So wide," says he, "is the field of speculation presented by these discoveries, that we may, in some respects, regard this great globe itself, with its 'cusps,' and spiral wires of air, earth, and water, as an immense pile and helix, which being excited by the natural batteries in the sea and atmosphere of the tropics, excites in turn its oxygen, and imparts to atmospherical matter the properties of magnetism." "With these lights," he continues, "we see *why air, which has completed its circuit to the whirl about the Antarctic regions, should then, according to the laws of magnetism, be repelled from the south and attracted by the opposite pole towards the north.*" Although we have endeavoured, in a very brief space, to give our readers some idea of our author's argument in favour of a relation between the magnetism of oxygen (not the magnetism of the earth) and the circulation of the atmosphere, we cannot admit that it is either consistent with fact or sound in theory. Whatever it be which constitutes "the magnetism of the earth," we must look to it as the origin and regulator of any magnetic action which may be found to exist upon the currents in our atmosphere.[1]

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[1] Professor Coffin has been led. by numerous observations, to place his "meteorological pole," or pole of the winds, in Lat. 104° North and Long. 105° West, coinciding nearly with the pole of maximum cold. See *Smithsonian Contributions to Knowledge*, vol. vi., p. 854.

[2] See *Edinburgh Encyclopadia*, Art. "Polar Regions," by Dr Scoresby, vol. xvii., p. 15; and *Encyclopædia Britannica*, Seventh Edition, Art. "Magnetism," vol. xiii., p. 695.

From the currents of the atmosphere our author passes to the currents of the sea, and he sets out with the assumption, "that from whatever part of the ocean a current is found to run to the same part, a current of equal volume is bound to return." It is not necessary that the ocean currents run, like our rivers, from a higher to a lower level. While some run on a level, others, like the Gulf Stream, actually run up hill. The currents from the Atlantic to the Mediterranean, and from the Indian Ocean into the Red Sea, run *down hill.* In order to explain this, in the case of the Red Sea, the surface of which is an inclined plane, Lieutenant Maury supposes its channel to be dry, smooth, and level, and that a wave ten feet high flows through the Straits of Babelmandeb up the channel at the rate of twenty miles a day, for fifty days, losing half-an-inch daily by evaporation. In this case it is obvious that, at the end of the fiftieth day, the wave will be twenty-five inches lower than it was on the day it began to flow. The surface of the sea consequently becomes an inclined plane by evaporation. The salt water, therefore, grows salter and heavier; and as the lighter water at the Straits cannot balance the colder, salter, and heavier water at the Isthmus, the latter must run out as an under current, otherwise it would "abstract all the water from the ocean to make the Red Sea brine," and ultimately a mass of solid salt.

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[1] In support of the doctrine of the crossing of the air in the Equatorial Calm Belts, Lieutenant Maury adduces the fact, stated by Lieutenant Jansen and Dr Moffat, that ozone is most abundant in the Northern Hemisphere in winds that have *Southing* in them, and in the Southern Hemisphere in winds that have *Northing* in them; and, supposing that this remarkable substance is the production of thunder and lightning, he presumes that it may be generated "among the detonations and clouds and rains of the Equatorial Calms." If this be its origin, he then asks, how it "can cross the trade wind regions except with the upper currents?" We cannot answer this and other analogous questions which he very ingeniously puts; but, with all the respect which we have for the opinions and reasonings of our author, we are led rather to question than to maintain the doctrine which he advocates, when it requires such arguments to support it.

It has been long ago ascertained, that while there is a surface current from the Atlantic always running into the Mediterranean, there is an outward under current running into the Atlantic, and charged with the additional salt produced by evaporation from the inland sea. This opinion of our author has been controverted by Admiral Smyth and Sir Charles Lyell, from the fact that water taken fifty miles within the Straits, from a depth of 4020 feet, was found by Dr Wollaston to be *four* times salter than common sea water, combined with the fact that the greatest depth of water at the Straits is 1320 feet. Hence they conclude that water, lying at depths greater than 1320 feet, can never flow out into the Atlantic over the submarine barrier at the Straits. Lieutenant Maury is at much pains to refute this apparently formidable objection to his theory, but he required only to refer to the beautiful experiments of Venturi on the lateral communication of motion in fluids, from which it is proved that a current of pure water passing over a deep pool of ink, or any other fluid coloured on purpose, would soon empty the pool, and replace the ink or coloured fluid with the pure water of the current. Hence it is manifest that the brine or very salt water which may occupy the depths or cavities of the Mediterranean Sea must be carried out into the Atlantic. Owing to the high temperature of the Indian Ocean, large currents of warm water have their origin there. One of these is the Mozambique or Lagullas current. Another, escaping through the Straits of Malacca, and joined by others from the Java and China Seas, "flows into the Pacific, like another Gulf Stream, between the Philippines and the shores of Asia," towards the Aleutian Islands, tempering climates, and losing itself on its way to the north-west coast of America.

After treating of the currents in the Pacific, of Humboldt's current on the coast of Peru, of under currents and the currents in the Atlantic, Lieutenant Maury proceeds to discuss the very interesting subject of "The open sea in the Arctic Ocean." Dr Scoresby informs us that whales have been caught near Behring's Straits with harpoons in them belonging to ships known to cruise in Baffin's Bay; and as it has been ascertained that these whales could not have passed round Cape Horn or the Cape of Good Hope, it follows that they must have travelled in open water through the Arctic Sea. As an additional argument for an open sea near the Pole, our author mentions the existence of a warm under current from the Atlantic into the Arctic Ocean through Davis's Straits, and he adds the opinions of Lieutenant De Haven, Captain Penny, and Dr Kane,[1] who found an open sea in very high latitudes. Important as these arguments are, the existence of an open sea at the North Pole itself may be inferred from the existence of two poles of maximum cold, surrounded by isothermal lines indicating increasing temperatures as we approach the Pole along the cold meridians which pass through the poles of cold, and the pole of revolution.

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[1] See this Journal, vol. xxvi., p. 426, 427, 440, 441.

The influence of the saltness of the sea on the equilibrium of its waters is the subject of Lieutenant Maury's ninth chapter. We have already seen that, owing to evaporation from its surface, which increases the saltness of the sea in certain places, and to the introduction of large rivers of fresh water, and heavy falls of rain, which diminishes its saltness in others, it must have various degrees of saltness in different localities. The currents, however, which we have described as in the waters which have different degrees of saltness, produce sea water of a uniform degree of saltness; so that "the constituents of sea water are, generally speaking, as constant in their proportions as are the components of the atmosphere." In order to explain why the sea is salt and not fresh, Lieutenant Maury suggests that one of its purposes "was to impart to its waters the forces and powers necessary to make their circulation as complete," and "as perfect as is that of the atmosphere or blood." In support of his opinion, that the sea has a system of circulation for its waters, our author refers to the coral islands, reefs, beds, and atolls of the Pacific, built up with materials quarried, as he expresses it, by a certain kind of insect from sea water, which contains 3½ per cent. of solid matter, supplied by rivers, in the form of common salt, sulphate and carbonate of lime, magnesia, soda, potash, and iron. If fresh supplies of these materials were not obtained by currents, the little creatures that build the coral rocks would perish for want of food before their work was finished.

Did the sea consist of fresh water, a feeble system of circulation would be produced by heat and evaporation alone, excluding the influence of the winds. Surface currents of warm and light water would pass from the Equator to the Pole, and another set of under currents, of cooler, dense, and heavy water, would pass from the Poles towards the Equator. But if the sea consisted of salt water, which contracts as its temperature is lowered till it reaches 28°, a new force is called into play. Evaporation in the trade wind region lowers the sea level, and increases the saltness of the sea. The water thus heavier sinks, while the lighter water rises, producing a vertical circulation. The raised vapour, carried by the currents of air to colder regions, gives to the ocean more fresh water as rain, or snow, than it returns to the atmosphere as vapour. The sea level is thus raised, and being depressed in the evaporating regions, a system of surface currents, moved by gravity alone, passes from the Poles towards the Equator.

If the sea had not been salt from "the beginning," there would have been none of the sea shells that cover the top of the Andes, or those infusorial deposits which astonish us by their magnitude and extent, and none of the coral islands which adorn the Pacific. When the rains dissolve the salts of the earth, and the rivers carry them to the sea, the marine insects elaborate them into pearls, shells, and corals; and while they are preserving the purity of the sea, they assist in the regulation of climates in parts of the earth far removed from the spots where they dwell.

Without entering into the question, whence does the sea derive its saltness,—whether, according to Darwin, from the washings of rains and rivers, or, as Lieutenant Maury believes, from the Almighty's fiat on the morning of the creation—it is interesting to notice the quantity of solid matter, in the form of salts, which the sea holds in solution. Taking the average depth of the ocean at two miles, and its average saline strength at three and a half per cent., its salt *would cover, to the thickness of one mile, an area of seven millions of square miles*, all of which passes into the interstices of sea water without increasing its bulk.

In a short chapter on "The Equatorial Cloud Ring," illustrated by his "Diagram of the Winds," we have the terraqueous globe divided into nine portions.

1. The Equatorial Cloud Ring, or the Belt of Equatorial Calms and Rains, or the Equatorial "*Doldrums*" of the sailor, —a word which we hope will escape from future treatises on the sea.
2. The *North-East* Trade Winds.
3. The Calm Belt of *Cancer*,—the "Horse Latitudes" of the sailor.
4. The prevailing winds from the Equator towards the *North* Pole.
5. The *North* Polar Calms.
6. The *South-East* Trade Winds.
7. The Calm Belt of *Capricorn*.
8. The prevailing winds from the Equator towards the *South* Pole.
9. The *South* Polar Calms.

The Equatorial Calm Belt is not only the region of calms and baffling winds, but also of rains and clouds; and under its dense, close, and sultry atmosphere, the Australian emigrants find it a "frightful grave-yard" for children and delicate passengers. Under this cloud ring, which encircles the earth, the thermometer and barometer stand lower than in the clear weather on either side of it. In the parallels over which it hangs, it promotes the precipitation of rain at certain periods; and "by travelling with the calm belt of the Equator to the north or south, it shifts the surface from which the heating rays of the sun are to be excluded, and gives a tone to the atmospherical circulation of the world, and a vigour to its vegetation." When it has thus left the Equator, the rays of a vertical "torrid sun" scorch the earth. Plants wither. Animals die. The mitigating cloud ring returns, and the burning rays of the sun are no longer received on the surface of the earth, but upon the upper surface of the cloud belt. Under this heating influence the clouds "melt away and become invisible;" the sun's rays dissolving one set of elevations, and creating another set of depressions. Were this cloud ring luminous, and seen from one of the planets, it would, according to Lieut. Maury, resemble the Ring of Saturn, the side which is opposite us appearing "jagged, rough, and uneven;" and it would seem to have a motion contrary to that of the earth.

In exploring the physical geography of the sea, our author accompanies the geologist "far away from the sea-shore" to study the phenomena presented by the inland basins of the earth, the Dead Sea, the Caspian, the Lake of Aral, etc., which have no sea drainage, and he proposes to explain their present condition by what he calls "the geological agency of the winds." The Dead Sea, the most interesting of these basins, is 1500 feet beneath the general sea level of the earth. The geologist refers this remarkable depression to forces of elevation or subsidence which have resided in the vicinity of the basin; but Lieut. Maury supposes, and endeavours to show, that these forces have come from the sea in the other hemisphere, through the agency of the winds. He supposes that the amount of precipitation (of rain, snow, dew, etc.) upon the water-shed of the Dead Sea, etc., was, at some former period, greater than its present annual amount of evaporation, and he asks, from what part of the sea did that excess of vapour come? and what has cut off that supply, since the amount of evaporation is equal to that of precipitation, and the level of this and other rock seas is as permanent as that of the ocean? If the Dead Sea formerly sent a river to the ocean, it would carry off the excess of precipitation over the vapour raised, and carried away by the winds. According to our author, "the salt-beds, the water-marks, the geological formations, and other facts traced upon the tablets of the rocks, indicate plainly that the Dead Sea and the Caspian had upon them in former periods more abundant rains than they now have;" and he is of opinion that the supply has not been cut off by the elevation or depression of the Dead Sea basin, and that the upheaval of mountain ranges and continents across the course of the winds has, by means of the winds produced upon inland lakes, the effect which would be occasioned by a greater or less amount of moisture.

As an example of drainage that has been cut off, and an illustration of the process by which precipitation and evaporation are equalised, our author takes the case of the Salt Lake of Utah, the basin of which is now salting up, and from which there is said to be the appearance of an old channel which once conducted its waters to the sea. If such a river existed, some cause must have operated to stop the supply of moisture, the excess of which was carried off by the river. Our author conceives that if the Sierra Nevada, the mountains to the west of the lake, now stand higher than they formerly did, and if the winds which fed the Salt Lake valley with moisture had to pass over the mountains, a less quantity of vapour would be carried across them than when the summit of the range was lower and warmer. In like manner, our author supposes that the Dead Sea, and the great inland basins of Asia, may have been deprived of the vapour which they once received when they were emptied by rivers into the sea, by the elevation of the South American continent, and the upheaval of its mountains. The elevation of the Andes has thus made Western Peru a rainless country, and Atacama a desert, by stopping the vapours of the ocean which fed them with moisture; and in the opinion of Lieutenant Maury, who adduces various ingenious arguments in support of it, it is the influence of the same range that has depressed the waters of the inland basins of Asia. According to geological speculations, the upheaval of one continent is supposed to be accompanied by the depression of another, as exhibited in the islands of the Pacific; and therefore, if we adopt the views of our author, we must take it for granted that no continent was depressed to the west of the Dead Sea when South America rose from the ocean. If the winds have the geological agencies now ascribed to them, our author conceives that they may instruct us in the chronology of geological events which have taken place in different hemispheres, "telling us which be the older—the Andes watching the stars with their hoary heads, or the Dead Sea sleeping upon its ancient beds of crystal salt."

The "Depths of the Ocean," whether they underlie the pure azure of the Indian seas, or the troubled current of the Gulf Stream, or the tangled sea-weeds which mat the Sargasso Sea, have a peculiar interest to the naturalist. While the land is the abode of vegetable, the sea is the home of animal life. In the sea bottoms, indeed, of the temperate zones, vegetation is peculiarly luxuriant; but in the tropical oceans the grandeur and abundance of marine life is more prominent still. "Whatever is beautiful, wondrous, and uncommon in the great classes of fish and echinoderms, jelly-fishes and polypes, and molluscs of every kind, is crowded into the warm and crystal waters of the tropical ocean,—rests in the white sands, clothes the rough cliffs, clings where the room is already occupied, like a parasite, upon the first comers, or swims through the shallows and depths of the elements, while the mass of the vegetation is of a far inferior magnitude."[1] On land, the animal kingdom is more widely diffused than the vegetable; but the arctic seas swarm with whales, seals, sea-birds, fishes, and countless numbers of the lower animals, even where the ice has obliterated every trace of vegetation. As we descend, too, from the surface, vegetable life disappears much sooner than animal; and from its hollows, which no ray illumes, the sounding lead attests the abundance of living infusoria.

While almost every corner of the land had been visited and explored by man, the bottom of what the sailors call *blue water* was utterly unknown to us. English, French, and Dutch navigators had attempted to fathom the deep sea, but their methods could not be relied upon beyond depths of eight or ten thousand feet; and even after great improvements had been made on the sounding apparatus in the United States, it was found that under currents prevented the lead from reaching the bottom, by carrying it out in the direction of the current. That this was the case, was proved by direct experiment. Lieutenant Walsh, of the U.S. Navy, with an iron wire sounding line *eleven* miles long, could not find the bottom at 34,000 feet. Lieutenant Berryman failed also in "mid ocean" with a line 39,000 feet in length; and Lieutenant Parker, in the same region, ran out a line 50,000 feet long without reaching the bottom. In order to solve the interesting problem of the sea's depth, the Congress of the United States authorised the employment of three public vessels; and, after the investigations were completed, the following plan was adopted:—Every vessel that desires it is furnished with a quantity of sounding twine (600 feet to the pound), marked at every length of 600 fathoms, and wound on reels of 10,000 fathoms each. One end of the twine is attached to a cannon ball of 32 or 68 lbs., as a plummet, which is to be thrown overboard from a boat (not from the ship), and suffered to uncoil the twine as fast as it will. When the ball reaches the bottom, it is detached, and of course lost. By measuring the quantity of twine left on the reel, and subtracting it from the whole length, we have the required depth of the sea, "at the expense of one cannon ball and a few pounds of common twine."

In carrying out a system of deep-sea soundings, it was the practice to record the time taken by every hundred fathoms to be uncoiled from the reel—a reel of the same size and "make," and sinker or cannon ball of the same shape and weight, being always used. By this means the following law of descent was established:—

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[1] Schleiden's *Lectures*, p. 403, quoted by Lieut. Maury.

Average Time of descent.	Number of Feet descended.
2 min. 21 sec.	2,400 to 3,000.
3 „ 26 „	6,000 „ 6,600.
4 „ 29 „	10,800 „ 11,400.

As the under currents in the ocean would sweep the line out horizontally at an uniform rate, while the cannon ball would drag it down at a decreasing rate according to the preceding law, the observer was able to discover when the line was carried out by the influence of the current or drift alone, and thus to determine the true depths at which experiments were made. In this way it was placed beyond a doubt, that the depth of the sea was not so great as it had been found to be by the imperfect methods formerly employed, and that the greatest depths which had been reached were in the North Atlantic Ocean, and did not exceed 25,000 feet, or *four miles and three quarters*. The deepest place in the ocean is considered by Lieut. Maury to be between the parallels of 35° and 40° of north latitude, immediately to the south of the Grand Banks of Newfoundland.

Having thus succeeded in reaching the bottom of the sea, an additional contrivance was required to bring up specimens of the materials of which it was composed. This was accomplished by Mr Brooke, of the U.S. Navy, by means of his "Deep Sea Sounding Apparatus." At the end of the tubular iron rod which passes through the cannon ball sinker, is placed a cup containing a little soap or tallow, called *arming*, to which the specimens of the sea bottom adhere, and are brought up, after the ball has been detached from the rod. By means of this apparatus, specimens have been obtained from depths of more than three miles, —some from the Coral Sea of the Indian Archipelago, and some from the Pacific and Atlantic Oceans.

Among the sea basins of the ocean, that of the Atlantic, the most frequented, has a peculiar interest, and is the subject of a long and interesting chapter in the "Geography of the Sea." Lieut. Maury has given us an orographic projection of its bottom, in which the soundings are represented by *four* different degrees of shade. The *darkest*, which is nearest the shore line, indicating depths less than 6000 feet; the *next*, those less than 12,000 feet; the *third*, those less than 18,000 feet; and the *fourth*, or lightest, those not greater than 24,000 feet. From the blank space north of Nova Scotia and the Grand Banks of Newfoundland, very deep water has been reported. The deepest part is probably between the Bermuda Isles and the Grand Banks. In another plate Lieut. Maury has given a vertical section of the Atlantic, showing the contrasts of its bottom with the sea-level in a line from Mexico, across Yucatan, Cuba, San Domingo, and the Cape de Verd Islands, to a point in the coast of Africa, in the parallel of 16° of north latitude. The importance of this system of deep-sea sounding has been recently impressed upon the public mind, and may be regarded as one of the many proofs constantly presenting themselves, that there is no branch of physical knowledge which will not sooner or later find a practical and social application. In the soundings of the North Atlantic Ocean, the bold engineer who has faith in the resources of science, has seen the practicability of laying a cable across its bottom, from Cape Clear in Ireland, to Cape Race in Newfoundland, a distance of *one thousand six hundred and forty miles!* Between these capes there is a remarkable steppe or ridge, already known as the *Telegraphic Plateau*, above which there is not more than 10,000 or 12,000 feet, or two miles of water. A company of enterprising and wealthy individuals has already been organised to carry a submarine cable across this plateau, and they have made a contract with a party in England to deliver to them in June 1858 a telegraphic cable of the required length; and, notwithstanding the failure of their first attempt, we cannot doubt that it will be ultimately successful.

In connection with this elevated ridge across the Atlantic, there is a ridge on the land "which runs nearly, if not entirely, around the earth." Leaving America between 45° and 50° N., it includes Great Britain, separates the drainage of the Arctic Ocean from the drainage southwards, and forms a chain of steppes and mountains extending across the continent of Asia, and disappearing in the Pacific. It was in the subaqueous part of the ridge that Brooke's sounding apparatus brought up calcareous shells of the Foraminiferæ, while in the Coral Sea the silicious infusoria and the Polythalamia were obtained; and more recently Lieutenant Berryman has found obsidian, pumice, etc., forming a line of volcanic cinders a thousand miles long, and stretching wholly across the Gulf Stream where the submarine cable is to be laid. Lieutenant Maury and others have found it difficult to determine the source of these volcanic materials. Occupying a line so extended, it is not unreasonable to suppose that submarine volcanoes were situated in or near the place where their products have been found. The specimens of animalcular life obtained from various seas place it beyond a doubt that the bed of the ocean is a vast cemetery consisting almost entirely of the remains of infusoria; and the unabraded appearance of these shells, and the almost total absence of any sand or other matter, seems to show that the bottom of the deep sea is in a state of perfect repose.

Although our author, in his chapters on the Atmosphere, and on Land and Sea Breezes, has treated generally of the Trade Winds, etc., and the Calm Belts which limit them, he devotes a long and valuable chapter to their more particular consideration, and their connection with the monsoons and other winds which prevail in different parts of the globe. The results at which he has arrived are exhibited in a Chart of the Winds and their routes in every part of the ocean,—the North-East Trades—the South-East Trades—the South-East and South-West Monsoons—the North-East and South-West Monsoons—the prevailing Westerly Winds, and the routes and average passage of ships (in days) bound to different ports in the Atlantic, Indian and Pacific Oceans. The *Monsoons* are those winds which blow during one half of the year from one direction, and during the other half from nearly an opposite direction. These winds are generally formed from trade winds. When "a trade wind is turned from its regular course, from one quadrant to another, or drawn in by overheated districts, it is regarded as a monsoon." When the monsoons have blown for five months, and become settled, both they and the trade winds which they replace are called monsoons. M. Dove considers the S.W. monsoon as the S.E. trade wind; and Lieutenant Jansen, that the N.W. monsoon is a similar deflection of the N.E. trade wind. The monsoons are produced by the overheated regions in Africa, Asia, and America; and their occurrence may always be known from the time when it is the hottest season in these localities.

The phenomenon called the *Changing of the Monsoons*, is beautifully described by Lieutenant Jansen, and quoted by our author. Gusts of wind arise, and are followed by calms. Thunder-storms occur day and night. Water-spouts, often 200 yards high and 20 feet wide, but sometimes 700 yards high and 50 yards wide, are formed by clouds descending in a tunnel form, and appearing to lap the water with their black mouths. When the wind prevents their formation, wind or air-spouts, more dangerous than water-spouts, shoot up like an arrow, and the sea makes vain attempts to keep them back. Lashed into fury, the sea marks with foam the path of the conflicting elements, and roars with the noise of its water-spouts.[1]

The climates of the sea, discussed in Lieutenant Maury's fifteenth chapter, differ greatly from those of the land. At sea, March is the coldest, and September the warmest month; whereas, on land, February is the coldest, and August the warmest. The reason of this is obvious. After winter, the solid dry land receives more heat from the sun in the day than it radiates at night, and hence it accumulates till it reaches its maximum in August. It is otherwise, however, with the sea. In it the surplus of summer heat is stored up to alleviate the severity of winter, and its waters increase in warmth for a month after the solid earth has begun to cool. On account of the great quantity of sea surface raised to a high temperature on the north side of the Equator compared with that on the south side, the summer in the Northern is hotter than that in the Southern Hemisphere. In the Atlantic this is undoubtedly the case; but in the Pacific observations are not sufficiently numerous to enable us to compare the temperatures of the two hemispheres in which it lies.

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[1] Lieutenant Jansen has observed a current in the air as remarkable as that of the Gulf Stream in the sea. This atmospherical gulf stream, as Lieutenant Maury calls it, is in the south-east trade winds of the Atlantic, and extends from the Cape in a direct line to the Equator. The homeward-bound Indiaman avails himself of it, as the European-bound American does of the Gulf Stream.

If we consider the ocean as a mass of water influenced *only by heat and cold*, it is obvious that it must be subject to certain surface movements different from those currents of which we have treated. An object, such as a floating bottle, set adrift at the Equator, and uninfluenced by the winds, would be carried to the fixed ice near the Poles, and would travel back by the same influences to the warm waters at the Equator. Lieutenant Maury has given an interesting map to illustrate the circulation of the ocean under the sole influence of heat and cold, and to indicate the routes by which the heated waters of the Torrid Zone escape to the regions of cold, and "the great channel ways" by which the same waters return again to the Equator. According to the best information which Lieutenant Maury has obtained, the velocity of these heated and cooled currents is, at an average, only *four knots a day*, and rather less than more. The immense body of warm waters in the middle of the Pacific and Indian Oceans, which give birth to the drift currents, are regarded by our author as the *womb of the sea*, teeming with organic life, so thickly distributed as to give "crimson, brown, black, or white colours to the waters which bear it." These coloured patches often extend as far as the eye can reach. One of these white spaces, 23 miles long, resembled a plain covered with snow. Its water was crowded with luminous worms and insects, some of the "serpents" being six inches long. Other patches that are pink coloured contain well-defined animalcules. The colour of the Red Sea is derived from a delicate kind of sea weed, and that of the Yellow Sea from a similar cause.

Under the head of Drift Currents, Lieutenant Maury describes a commotion in the water, called "Tide Rips," revealing a conflict of tides or currents. They are generally found near the equatorial calms, starting up without any wind, and moving along at the rate of 60 miles an hour with a roaring noise, "as if they would dash over the frail bark, helplessly flapping its sails against the masts." To other unexplained movements of the sea, the name of *Bores* and *Eagres* has been given. The Bores of India, of the Bay of Fundy, and of the Amazon, are the most remarkable. They are tremulous tidal waves, which roll in periodically from the sea, engulphing deer, horse, and other wild beasts that frequent the beach. The name *Eagre* is given to the Bore of Tsien-Tang river. It attains its greatest magnitude opposite to the city of Hang-chau, one of the busiest in Asia; and when it appears, it is announced with loud shouts from the sailors, drowned in its noise of thunder. All work comes to a stand. A wall, like one of chalk, or rather a cataract, 4 or 5 miles across and 30 feet high, advances with a velocity of 25 miles an hour. It passes up the river in an instant with diminishing velocity, occasionally reaching a point 80 miles distant from the city. The rise and fall of the wave is sometimes 40 feet at Hang-chau, and it is supposed to be produced by a peculiar configuration of the river and its estuary.

After describing these movements, and others equally inexplicable, our author, rather fancifully, regards them as "the pulsation of the great sea-heart, which may *perhaps* assist in giving circulation to its waters through the immense system of aqueous veins and arteries that run between the equatorial and polar regions." In the machinery which governs the sea, the sunshine, the clouds without rain, the day and night, with their heating and radiating processes, are the cogs and notched wheels which compose it, and which, amid all the jarrings of the elements, preserve in harmony the exquisite adaptations of the ocean.[1]

There is no branch of the Geography of the Sea more interesting to the reader, or more important to the mariner, than that which treats of the rotatory storms, and the hurricanes of the ocean. Our author treats of them in a very imperfect manner, and in a very brief chapter. It consists chiefly of a long extract from Lieut. Jansen's work, in which no reference is made to the valuable labours of the late Mr Redfield[1] of New York, of Professor James Espy of Washington, or of our distinguished countryman, Sir William Reid. The typhoons or white squalls of the China seas are furious gales of wind, arising from disturbances of the atmospherical equilibrium generated among the arid plains of Asia. Their influence extends to the China seas, which are included in the region of the monsoons of the Indian Ocean; and during the changes of these monsoons the typhoons and white squalls prevail.

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[1] On his Chart exhibiting the sea-drift our author has also marked the most favourite places of resort for the *right whale* and the *sperm whale*, the former occurring in cold, and the latter in warm water. Cold water fish being more edible than those of warm water, we see on the Chart the places which are most favoured with good fish markets. "In the course of these investigations," says Lieutenant Maury, "the discovery was made that the Torrid Zone is to the right whale as a sea of fire, through which he cannot pass; that the right whale of the Northern Hemisphere and that of the Southern are two different animals; and that the sperm whale has never been known to double the Cape of Good Hope—he doubles Cape Horn."

In the Drift and Whale Chart our author has marked a large space between New Zealand and the southern part of America as a *desolate region, in which mariners find few signs of life in the sea or air.* The meridian of 120° west longitude, and the parallel of 45° south latitude, pass through its middle point.

The *Cyclones* of the Indian Ocean, or the Mauritius hurricanes, take place during the contest between the trade wind and monsoon force, at the changing of the monsoon, and when neither force has gained the ascendency. At this period of the year the winds "seem to rage with a fury that would break up the very fountains of the deep."[2] The West India hurricanes take place when the monsoons are at their height. The trade wind and monsoon forces now pull in opposite directions, and most powerful revulsions of the atmosphere are required to restore the equilibrium of the atmosphere. The hurricanes in the North Atlantic Ocean take place during the African monsoons, and those of the South Indian Ocean in the opposite season of the year, during the prevalence of the north-west monsoons of the East Indian Archipelago. This coincidence of hurricanes with monsoons is supposed by Jansen to indicate that the one disturbance is the cause of the other. In the rotatory storms north of the Equator, the motion is from the right hand to the left; and in those to the south of the Equator, from the left hand to the right, like the hands of a watch. Judging from the Storm and Rain Charts of the Atlantic, the half of the earth's atmosphere which covers the Northern Hemisphere is in a much less stable condition than that which covers the Southern. "There are, as a rule, more rains, more gales of wind, more calms, more fogs, and more thunder and lightning, in the North than in the South Atlantic."

We regret that our limits will not permit us to give an account of the researches of the authors we have already mentioned, on the subject of the Cyclones or Rotatory Storms. So early as 1838, Sir William Reid suggested to the East India Company that they should take steps to trace the storm tracks in the Indian seas. The suggestion was adopted; and all the officers of the Company, civil and military, were instructed to send their observations to Mr Piddington at Calcutta, himself an able seaman, who undertook the task of collecting them, and publishing the results. After communicating numerous memoirs on the subject to the *Journal of the Asiatic Society of Bengal*, he published an abstract of the whole in his valuable work, entitled *The Sailor's Horn-Book of the Law of Storms in all parts of the World.* The late Mr W. C. Redfield of New York had previously devoted much time to the same subject, and published various important works on the storms of the West Indies and the coasts of the United States.[1] Colonel Capper[2] had, so early as 1801, attempted to show, that the hurricanes of the East were *great* whirlwinds: and he merely hinted at the idea, that they had a progressive motion. Mr Redfield, whose position on the Atlantic coast, gave him the finest opportunities of observing these phenomena, came to the conclusion, that the hurricanes of the West Indies were, like those of the Indian Seas, great whirlwinds, and that the whole of the revolving mass of atmosphere advanced with a progressive motion from south-west to north-east; and hence he draws the conclusion, *that the direction of the wind at a particular place, forms no part of the essential character of the storm, and is, in all cases, compounded of both the rotative and progressive velocities of the storm, in the mean ratio of these velocities.* In the further prosecution of this subject, he was led to the important result, that the great circuits of wind, of which the trade winds form an integral part, are nearly uniform in all the great oceanic basins, and that the course of these circuits, and of their stormy gyration, *is, in the* SOUTHERN *Hemisphere, in a* COUNTER DIRECTION *to those in the* NORTHERN *one, producing a corresponding difference in the general phases of storms and winds in the two Hemispheres.*[3]

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[1] Mr Redfield's name is only once referred to in a note.

[2] In one of these hurricanes, accompanied by hail, in the South Indian Ocean, in 25° south latitude, several of the crew were made blind, others had their faces cut open, and those who were in the rigging had their clothes torn off.

Our distinguished countryman, Sir William Reid, was led to study this subject, in consequence of being employed at Barbadoes to re-establish the Government buildings blown down by the hurricane of 1831, in which 1477 persons perished in the short space of seven hours. Impressed with the conviction that Mr Redfield's views were correct, he endeavoured to verify them, not only by projections, on a large scale, of the facts given by the American author, but by facts taken from the logs of British ships furnished to him by the Admiralty. By thus grouping the various phenomena of numerous storms, he convinced himself of their rotatory and progressive character, and arrived at the conclusion, that they derive their destructive power from their rotatory force, and that the storms south of the equator revolve in a contrary direction—namely, from left to right—to that which they take in the Northern Hemisphere. These views seem to have been generally adopted by meteorologists, with the exception of Professor Espy, who maintains that, in the hurricanes supposed to be rotatory, the winds blow to a certain point, and that the idea of the rotation and translation of great bodies of air is inconsistent with the observed phenomena. Dr Hare, and our able countryman, Mr Russell of Kilwhiss,[1] have adopted the same opinion; and several meteorologists who had embraced the rotatory theory, have evinced a disposition to abandon it.

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[1] See Silliman's *Journal*, vols. xx. and xxi.; Blunt's *American Coast Pilot*, 12th edition, pp. 626–629; and *The United States Naval Magazine.*

[2] *On the Winds and Monsoons.* 1801.

[3] The English reader who has not access to Mr Redfield's works, will find a pretty full abstract of their contents in a review of them, entitled, *On the Statistics and Philosophy of Storms*, written by the author of this article, and published in the *Edinburgh Review for January* 1839, vol. lxviii., pp. 406–432.

Having shown his readers how the winds blow and the currents run in all parts of the sea, Lieutenant Maury exhibits, in an interesting chart, the principal routes across the ocean; the great end and aim of all his researches being the shortening of passages, and the improvement of navigation. The routes are marked by the figures of vessels, upon which are engraven the average passage in days, and which are crossed by lines that show whether the prevailing direction of the wind be adverse or fair. The winds and currents which are met with in these routes are so well understood, that vessels sailing, with the same destination, on different days of the week, may count upon coming up and meeting one another at different parts of their route. If two ships, for example, sail from New York to California, the one a week after the other, the faster of the two will make up to the other; and they will cross each other's paths many times, the tracks of the two vessels being sometimes so nearly the same, that, when projected on the chart, they would appear almost coincident.

The route from New York to California is 15,000 miles in length. "It is," says Lieutenant Maury, "the great race-course of the ocean. Some of the most glorious trials of speed and prowess that the world ever witnessed among ships that 'walk the waters,' have taken place over it. Here the modern clipper ship—the noblest work that has ever come from the hands of man—has been sent, guided by the lights of science, to contend with the elements, to outstrip steam, and astonish the world. The most celebrated ship-race that has ever been seen, came off upon this course in the autumn of 1852, when *four* splendid new clipper ships put to sea from New York, bound for California.

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[1] *North America—its Agriculture and Climate.* By Robert Russell, Kilwhiss. Edinburgh, 1857. The eighteenth chapter of this excellent work, entitled, *Climate of North America*, and illustrated with numerous diagrams, will be read with the deepest interest by every meteorologist.

They were ably commanded. . . . Like steeds that know their riders, they were handled with the most exquisite skill and judgment. Each being put upon her mettle from the start, was driven under the seaman's whip and spur at full speed over a course that it would take them three long months to run." Lieutenant Maury has given a minute and interesting account of this race, detailing all the adverse and favourable events which occurred in the voyage of each ship; and he concludes it with the following observation:—"Here are three ships, sailing on different days, bound over a trackless waste of ocean for some 15,000 miles or more, and depending alone on the fickle winds of heaven, as they are called, to waft them along; yet, like travellers on the land, bound upon the same journey, they pass and repass, fall in with and recognise each other by the way; and, what perhaps is still more remarkable, is the fact, that these ships should, throughout that great distance, and under the wonderful vicissitudes of climates, winds, and currents which they encountered, have been so skilfully navigated, that, in looking back at their management, I do not find a single occasion on which they could have been better handled."

In concluding this interesting chapter, our author mentions a remarkable fact, illustrative of the accuracy of the knowledge which we now possess concerning the force, set, and direction both of winds and currents. He had calculated the detour which these three vessels would have to make, on account of adverse winds, between New York and their place of crossing the Equator. The whole distance was, according to his computation, 4115 miles. One of the ships reached the Equator after sailing 4077 miles, and the other after sailing 4099 miles—the one within thirty-eight, and the other within sixteen miles of the computed distance.

Such is a brief analysis of Lieutenant Maury's able and valuable work—the foundation of a new science, which cannot fail to be cultivated with ardour, because all nations, whether maritime or inland, have the deepest interest in its advancement. It is no slight merit to have collected, as our author has done, the numerous and important facts which constitute the "Geography of the Sea," and to have deduced from them general views of the economy of the ocean, and practical rules for its navigation; but Lieutenant Maury is entitled to the higher praise, of having organised, in the United States, a numerous staff of observers, to prosecute his favourite inquiries, and of having successfully appealed to the sympathy and co-operation of the most important maritime communities.

In bringing under the notice of our readers works of such transcendent merit as that of Lieutenant Maury, we are never disposed to view them with a critical eye, and have seldom exercised the unenviable and much abused privilege of our craft. Regarding the "Geography of the Sea," however, as a standard work, which must pass through many editions, and receive many corrections and additions from every sea-faring observer, we feel that we are, in some degree, conferring a favour on its author, by a frank expression of the sentiments with which we have perused it. As a work on general physics, in which new phenomena are to be referred to established laws, we are disposed to think that it requires some revision, both with regard to its theoretical deductions, and the grouping of the facts which are supposed to authorise them. Lieutenant Maury himself frequently tells us that his views, on certain points, are merely provisional, and adopted till some better explanation is obtained; but this process is hardly compatible with the principles of the inductive philosophy, and we would rather have facts without causes, than facts but provisionally explained.

In the structure and composition of the work, too, there is considerable repetition, both of the facts and theories which it contains. We find the same ideas sometimes repeated in the same page, and frequently in different parts of the volume; and, though sharing in the religious conviction, we cannot bring ourselves to approve of the reiterated calls which the author makes upon us to admire the wisdom and beneficence of the Creator, in the currents of the ocean and of the air, and in the part which they play in the amelioration of climates, and in the other beneficent arrangements and adaptations which human interests demand. Sentiments so just and noble, we cannot but feel and admire. "The great globe and all that it inherits," is a mechanism as complete as any of its individual organisms; and the hurricanes, the thunderstorms, the famines, and the pestilences, at which humanity shudders, are as essential parts of its mighty frame, as the nerves, and arteries, and muscles, of organic life. To know and to cherish this great truth, is an acquisition of no ordinary value; but it may be unwise to weaken it by repetition, and still less wise to insist upon our admiring speculative adaptations, which, in the progress of science, may turn out to be imaginary.

In the character of our author's mind, marked by strong religious convictions, we discover the source of another imperfection in his work, to which we have felt some difficulty in referring. It is now, we think, almost universally admitted, and certainly by men of the soundest faith, as well as by the most devoted believers in the verbal inspiration of the sacred writings, that the Bible was not intended to teach us the truths of science. The geologist has sought in vain for geological truth in the inspirations of Moses, and the astronomer has equally failed to discover in Scripture the facts and laws of his science. Our author, however, seems to think otherwise, and has taken the opposite side, in the unfortunate controversy which still rages between the divine and the philosopher. Even on the subject of winds and waves, he quotes the authority of the sacred page, and this so frequently, that we cannot produce a better antidote to his views, and a better argument in support of our own, than by a simple quotation of the passages in which he appeals to Scripture:—

"The Bible," says our author, "frequently makes allusion to the laws of nature, their operation and effects. But such allusions are often so wrapt in the folds of the peculiar and graceful drapery with which its language is occasionally clothed, that the meaning, though peeping out from its thin covering all the while, yet lies, in some sense, concealed, until the light and revelations of science are thrown upon it; then it bursts out, and strikes us with exquisite force and beauty.

"As our knowledge of nature and her laws has increased, so has our understanding of many passages in the Bible been improved. The Psalmist called the earth the 'Round World;' yet for ages it was the most damnable heresy for Christian men to say the world was round; and, finally, sailors circumnavigated the globe, proved the Bible to be right, and saved Christian men of science from the stake.

"'Canst thou tell the sweet influence of the Pleiades?' Astronomers of the present day, if they have not answered this question, have thrown so much light upon it as to show that, if ever it be answered by men, we must consult the science of astronomy. It has been recently all but proven,[1] that the earth and sun, with their splendid retinue of comets, satellites, and planets, are all in motion around some point or centre of attraction inconceivably remote, and that that point is in the direction of the star Alcyone, one of the Pleiades! Who but an astronomer, then, could tell their 'sweet influences?'

"And as for the general system of atmospherical circulation, which I have been so long endeavouring to describe, the Bible tells it all in a single sentence: 'The wind goeth towards the south, and turneth about unto the north; it whirleth about continually, and the wind returneth again according to its circuits.' —*Eccles.* i. 6. . . . Have I not, therefore, very good grounds for the opinion, that the 'wind in her circuits,' though apparently to us never so wayward, is as obedient to law, and as subservient to order, as was the morning stars when they 'sang together.'"

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[1] This is *not* the opinion of Astronomers. It is a speculation of M. Mædler, a German Astronomer. The central point referred to is situated between the stars π and μ *Herculis*, at a quarter of the apparent distance of these stars from π *Herculis*. See this *Journal*, vol. iv. p. 232, vol. vi. p. 241, and vol. viii. p. 532.

Among the nations that sent representatives to the Brussels Conference, and agreed to co-operate with the United States in carrying on an uniform system of observations at sea, our own country stood conspicuous, and we are glad to say that a Meteorological Department was added to the Board of Trade, and placed under the able superintendence of Rear-Admiral Fitzroy, for the purpose of carrying on this important undertaking. The Board has already issued several valuable works;[1] and when we consider the vast extent of the shipping interest of Great Britain, its numerous vessels of war and of commerce, we have no doubt that a body of facts will be collected respecting the currents, winds, and hurricanes of the ocean, which, while it will improve the art of navigation, and add to our knowledge of the physical geography of the terraqueous globe, will also give additional security to the life and property so largely exposed to the abnormal influences of the elements. There is no branch of administration of more value to the state than that which has been so recently intrusted to the Board of Trade; and we trust that the ephemeral governments, to which English interests seem destined to be committed, will not forget, in their struggles for power, that a permanent reputation may be gained by those peaceful achievements which contribute to the happiness of society and the wealth of nations. We do not now ask them, as we have often done in these pages, to take an interest in those abstract sciences which sooner or later find a social and practical application. They have hitherto failed to appreciate what we unwillingly think seems above their comprehension, and we must wait in patience till a better education shall place the statesmen and senators of another generation on a level with the advisers of foreign princes, who have endowed the sciences and the arts as the most enduring sources of national greatness.

[1] These publications are enumerated in the list of works placed at the head of this article.

ART. VI.—*Parliamentary Government, considered in reference to a Reform in Parliament.* By EARL GREY. London: Bentley, 1858.

A POLITICAL treatise by an eminent public man ought to be peculiarly instructive; inasmuch as its theoretic reasoning must, in a greater or less degree, be guided by direct experience. The British statesmen of this generation rarely condescend to contribute to political literature, except in the shape of controversial essays, directed simply to a defence of their respective opinions. This characteristic of the leading men in either House, is unfortunately on the increase. Since the appearance of Mr Gladstone's "State and Church," twenty years ago, no important work on the public interests of this country, although the occasions have not been wanting, has appeared from the pen of any of our statesmen. The treatises of Sir G. C. Lewis are entirely of an abstract character. This change, there is no doubt, has partially resulted from the great development of the newspaper press, which tends to anticipate all other political criticisms than those which are delivered within the walls of Parliament. It follows that nearly the whole benefit which legislation can derive from the dispassionate treatment of political questions in literature, must be derived from pure theorists.

It may be doubted whether this growing characteristic does not apply, with equal force (*mutatis mutandis*), even to the school of French statesmen. The insecurity of government in France, which renders the political controversies of the day wider in that country than in our own, commensurately widens also the breach between political parties. Questions which here are ministerial, are dynastic there. French statesmen, driven from office, are more often driven into exile; while British statesmen, driven from office, become sometimes more prominent in opposition. An exiled statesman has not only more leisure (where indeed exile is not attended by poverty) to examine political questions on paper than a statesman active in opposition; he is not only deprived of all other means of openly influencing opinion in his own country; but the *party* questions in which his own fortunes are involved demand a treatment proportionately more comprehensive. The party spirit, therefore, which develops itself in inquiries into the general philosophy of government in the political writings of French statesmen, is but the analogue of the party-spirit which rarely penetrates beyond questions of detail, in the essays and pamphlets of public men in this country.

But it must not be supposed, in consequence of the peculiar position of Lord Grey's work among the productions of living statesmen, that it affords a true index of the abilities of the author. Few men combine practical with theoretic talent. Still fewer at once speak well and write well. Even Burke not less completely failed as a debater than Lord Grey can be said to fail as a writer. This author's eminence in debate, therefore, may shield his fame against the prejudicial deductions that might otherwise be fairly drawn from the deficiencies of his present work. But its carelessness is almost unpardonable. It bears not the slightest trace of revision. A practised writer could have reduced it within one-half its compass, by simply striking out tautologies, verbiage, and self-contradictions. Its truisms are sometimes so gravely and axiomatically enforced, as to create a smile for their solemn triteness. Thus, Lord Grey tells us, at p. 41, in dealing with parliamentary corruption, "that *no just objection* can be taken to a man's seeking employment in the public service, for himself, his friends, and his relations, *by honourable means!*"

A writer who will gravely commit such assertions to a designedly didactic essay, can hardly complain if critics ignore his capacity for public teaching. Another error of equal import rests in the extraordinary length to which Lord Grey carries his demonstration of propositions which every reader would be content to assume, and which not seldom are self-evident. Such a mode of treatment is admissible only in deep philosophical investigations, in which every sentence represents a distinct logical process, and in which deductions, in themselves obvious, are drawn out in words simply as links in a continuous chain of the closest reasoning. These pervading defects of Lord Grey's essay, are the more to be regretted, inasmuch as they tend to blind a casual reader to many observations of much force and originality, and to the valuable record of thirty years' experience in public life of an acute and observant statesman.

The most prominent characteristic of this essay is probably the entire absence of party bias. This, indeed, might seem a peculiar merit in a statesman who, since he was one-and-twenty, had been immersed in party strife, did we not remember that Lord Grey has himself practically repudiated the Whig communion, and during the last six years has stood aloof from every combination. But it is a characteristic, at any rate, which implies sincerity of profession and singleness of purpose. When a nobleman, in the enjoyment of public reputation, comes forward, neither to promote his party views nor to vindicate his own policy, but to express convictions, which are at least the result of his experience and reflection, he is certainly entitled to a courteous reception from his opponents. That courtesy, we think, he has not received; and while we shall not shrink from pointing out the shortcomings of his reasoning, we shall hope to do justice to the observations which tend to advance the subject of parliamentary government.

It will be our aim, in the present article, to deal, *first*, with the general principles argued by Lord Grey, so far as they form a basis for the decision of the practical questions of reform that are about to be discussed in Parliament; and, *secondly*, to point out the cardinal defects in the existing system of representation throughout the United Kingdom.

The principles shadowed forth by Lord Grey in this Essay, are exactly such as tend to cut him off from communion with every recognised school of public men. His view of the *το καλον* of politics, is the maintenance of the *status quo*. He is no ally of the old Tories, who look back to everything subsequent to the Liverpool administration, as to a hideous dream; and he is no ally of the Reformers, who seeks to improve on the Reform of 1832. He is equally scandalised by the corruption which preceded the Reform Act, and apprehensive of the insecurity which he thinks a further revision of the House of Commons must create. On some points he is prepared to regard the Act of 1832, as too comprehensive. Now, the isolation of these views is a fair test of their candour and sincerity. But it will be seen, from a review of the grounds on which they are based, that they are neither logical nor consistent, and tend to build up an entirely unintelligible proposition.

The original axiom of Lord Grey's theory, though different from that on which politicians commonly raise their theories of reform, is at least plausible. He sees the true test of a wise representation, not in its fidelity in representing the different classes of the nation, but in the effect which such a representation may produce on the stability of the executive government. Politicians will always differ on this head, according as they may conceive these tests to differ or to coincide. The genuine liberal will declare that the representation of every class in the legislature, is a higher aim than the mere strength of the executive; and, moreover, that that representation affords also the best security for the excellence of the executive itself. Both Lord Grey and the Liberals, therefore, converge to the same end—the character of the Administration—in consequence of their seeing administrative excellence under different conditions. Lord Grey's definition of an excellent government is (in great measure at least) a strong government. His proposition may also be accepted or ignored, according to the sense in which a strong government is understood. But Lord Grey assumes this strength to consist in the secure maintenance of parliamentary majorities, by other than patriotic and disinterested support—that is to say, by corruption. Now this is not only a proposition to which every advocate of honest government, as well as every theoretic liberal, would demur, but it is irreconcileable with Lord Grey's antecedent postulate. For even if we were to concede, for argument's sake, both the necessity of a strong government, and the impossibility of securing it, otherwise than by parliamentary corruption, and a false popular representation, yet if this corruption, and this false representation were to be preserved for the sake of executive stability, there ought to have been no reform at all, since Lord Grey refers the present weakness of government to these causes. He stands, therefore, indefensibly enough, midway between two distinct principles, each in itself perfectly intelligible. He is an earnest advocate of the corruption which still exists; but he is a no less vigorous assailant of the corruption which existed under George III. And he freely acknowledges, that the corruption which remains, although considerable, is insufficient for the maintenance of a strong government. Probably a more damnifying argument against the present system of corruption, was never yet put forward by one of its own defenders.

Lord Grey's argument in favour of a "strong government," is worth a moment's analysis, as the foundation of his whole principle. We accept the term in the author's own sense, and denote that kind of administration which can rely upon the support of a majority in Parliament, or any particular measure, without direct reference to the excellence of the measure itself. Such a state of things can only exist either under strong pressure, or under the vigorous discipline which great party questions can alone maintain. Accordingly, whenever these great party questions become defunct, "strong administrations" could only exist on a double basis of parliamentary corruption and borough nomination, where there was an equal pressure within and without the walls of Parliament. The absurdity of such a system, in a representative government, is too obvious for comment. If it were needful for Peers to nominate members of the House of Commons, and for government to bribe both the nominees and the nominating Peers, in order to maintain an administration in power, it was clear either that the administration was unworthy of confidence, or that the people were unfit to be trusted with power. At any rate, representation was a mere stalking-horse for aristocratic government. There could be no defence of a system intrinsically illusive and corrupt. Accordingly, Lord

Grey himself does not go so far as to test and condemn the Parliamentary Reform of 1832, by its effect on the strength of administrations, although he is clearly of opinion that the reform was too comprehensive. But he does go so far as to test further reform by this standard, and to condemn it because he deems it inconsistent with a strong executive.

Now, we clearly hold the "strength" of the executive is of less moment than the fidelity of the representation. But while we would not distort the representation simply to strengthen the executive, we are ready to acknowledge that the derision, with which it is now the fashion to treat the old conservative theory of a "strong government," is carried beyond justice. Mr Hallam, as the mouth-piece of the theoretic Liberals, asserts, that no government requires any other strength than that which flows spontaneously from the excellence of its administration. Lord Grey, on the other hand, would hold, that a minister should possess some antecedent confidence in his ability to press his measures in the Commons. His opponents have already replied to him, that he entirely mistakes the functions of government; that it is the duty of a minister to overlook and superintend everything, and to alter, as little as possible.

This is no answer to Lord Grey's position. If we refer to the parliamentary history of the last thirty years, since the accession of the Duke of Wellington's ministry, in 1828, we shall find it an unbroken history of legislative change, legal, fiscal, and constitutional. We shall find that nearly every government has acceded to power and has fallen from power, not on questions of general administration, but on some one principle affecting our polity, our finances, or our jurisprudence. These definite points of issue have commonly been the distinct and real grounds on which the falling government has lost parliamentary confidence. In the face of these examples, and of this period of time, it is hardly possible to describe the most important function of government as consisting in *supervision;* and the less important function, as consisting in *change.* It may be answered, perhaps, that, during the last thirty years, we have been in an abnormal condition, in consequence of an accumulation of abuses in our constitution. But, if we admit this assertion to be partially true, it is not less certain that we see no end to the vista of reforms which encircle the path of the future. It is clear, therefore, that, important as may be the duties of mere administrative supervision, there is no evasion of the destiny of legislative change. And it is a striking illustration of the practical acknowledgment of this view of the case, that whenever a government takes office weak in parliamentary support, it invariably bases its prestige on its reforming activity. This has been exemplified by the only three Conservative governments which have assumed office, since the Reform Act, in the face of a hostile majority. It has been instanced by the Peel ministry of 1834, by the Derby ministry of 1852, and by the Derby ministry, which exists at this hour. The greater the weakness of government in the House of Commons, the greater has been the impulse of legislation.

Now the practice of parliamentary government, which renders a division upon the chief questions introduced by ministers a test of confidence in them, has a direct bearing on this question. If a ministry be compelled to legislate, and be compelled also to receive the acceptance or refusal of their measures by parliament as a test of its confidence, it is quite clear that they will shape their measures, in a great degree, not according to what they believe to be most expedient, but according to what they believe most practicable. They will continually be tempted to forego their principles for their places. Now, it is a distinct advantage in a "strong government," that this liability can rarely exist. On the abstract proposition, therefore, of the advantage of a strong government, Lord Grey is presumptively in the right.

But it is not less clear, on the other hand, that if ministers are now in the habit of deviating from their convictions (as Lord Grey himself complains), under a fear of faction in the House of Commons, the maintenance of the *status quo* is not the expedient which is to cure the evil. A government strong in parliamentary, as distinguished from national support, is now a chimera. Whatever risks we encounter in a new reform, we cannot, at all events, risk a possession which we have already lost. And the apprehension of Lord Grey, that government will be further weakened by a further reform, depends entirely on the nature of the reform itself. The reform which we hope to see accomplished, is that of a more just representation of the intelligent classes, not an increase of democracy. Such a reform must tend to the greater stability of Parliament.

Now, it appears that this is just what is required, in order to give the country that "strong executive," under a free Parliament, which it formerly possessed under an aristocratic Parliament. We fully concur with Lord Grey, that we have not, under our present constitution, that guarantee for the security of government that we should desire. We believe that this is to be obtained only by progress or retrogression. We fully acknowledge that, in the old constitution, much was swept away that ought to have been retained. But we are equally certain, that in order to bring back that administrative stability, —the loss of which Lord Grey laments—it would be necessary to reintroduce a corruption, and a bondage, which would be equally impolitic, and impracticable. Lord Grey's disposition to halt midway upon the bridge, is therefore entirely inconsistent with the end which he holds in view. Now, the evidence that the evil in question rests rather with the House of Commons than with the country at large, is to be found in the fact, that the country has nearly always proved more stable than the House of Commons. The combination against Lord Palmerston's government by Parliament, in February 1857, and the reversal of the parliamentary verdict by the nation, form one of many instances which vindicate this position.

Turn to the chapter on the advantages of parliamentary government: Lord Grey enumerates five cardinal advantages. The definition is one in which we cannot entirely acquiesce. Parliamentary government, he tells us, "first enables the different powers of the state, to work with harmony and energy." (P. 16). This proposition can be understood, but in a qualified sense. Undoubtedly, the distinct estates of the realm are brought into theoretically and harmonious action. But the whole system of parliamentary government is discord and opposition. "Secondly," he tells us, "it brings the policy of the executive under control and review of the legislature." This is quite accurate. But, "thirdly," he gives us the following criticism, which is altogether irrelevant:—

> "It is another great advantage, which may, I think, justly be attributed to parliamentary government, that it renders the contests of men for power as little injurious as possible, and furnishes what seems, on the whole, the best solution hitherto discovered, of the great problem, how to provide some safe mode of determining to what hands the principal direction of public affairs shall be intrusted. Ambition is so strong a passion of human nature, that in every age of the world, in every state of society, and under every different form of government, men have continually carried on, in some way or other, contests for political power. In the old despotisms of the East, the earliest governments of which we have any historical record, open violence, murder, and treason, seem to have played the principal part in these contests. We read of one despot thus wresting the sceptre from another; or the ambitious ministers snatching, by the destruction of their rivals, the power exercised in the name of their nominal masters. Among the semi-civilized nations and tribes of Asia, the same means are to this day employed for the same object, and bloody changes of rulers are of constant occurrence."—(P. 23.)

The obliquity of this criticism cannot have escaped the reader. Lord Grey confuses all distinctions of time, of race, of culture, and of *civil* liberty. And he thence appears to imply, that if we had not *political* liberty under a parliamentary polity, we should be just the same in our notions of government with the earliest

Asiatics, in spite of the incalculable difference presented by our society, before our parliamentary government arose!

The comparison which Lord Grey ought to have taken is not between the modern English and the ancient Asiatics, but between our present parliamentary statesmanship, and the present Continental bureaucracy. Now, if he were to compare the conflict of statesmanship at Westminster, with the conflict of statesmanship at Vienna, he would find the illustration destructive of his proposition. At Vienna there is no lack of aspirants for office. The political service of the state is probably a wider profession in that Empire than in our own, in consequence of the peculiar laws of Austrian society, which narrow the choice of paths to distinction. At Vienna, where there is no such sacrilegious thing as a Parliament allowed, we know neither of "open violence, murder, nor treason." In more intelligible phraseology, we scarcely hear even of intrigue; we except of course, the abnormal condition of Hungary. A minister assumes power, and he holds it during forty years. No rival disputes his pre-eminence. This happened successfully with Kaunitz and Metternich. The present minister has already held office for eight years, and there are those in Austria better qualified, and at least equally ambitious, for his post. Yet no effort is made to dislodge him from power; and, whatever rivalry may exist, is probably quite untainted with personal acrimony. We have chosen the instance of the Austrian Court, as that which is most applicable, from the corresponding stability between the character of the British and the Austrian constitution. Of course, if Lord Grey were to compare the Courts of Paris or Constantinople with our own, we should reply, that the instances were not analogous. In the one case, he would be comparing modern usurpation with old established government; in the other he would be commingling Asiatic with European character.

We have dealt with this subject at length, in order to point out the confusion in Lord Grey's mind, of the different elements of the English character. The author ascribes everything to political institutions, nothing to the prominence of our civil liberty, or to the idiosyncracy of our original social constitution. A vindication of parliamentary government must rest on very different grounds, if it would be just and effective.

The same inconsistency which attaches to Lord Grey's notions of constitutional reform, applies (and with even greater force) to his views of patronage and bribery. Indeed, it is impossible to draw a single deduction from his arguments on these points. He traces, with much force and perspicuity, the improvement of our political morality since the age of George III. He views this improvement with the satisfaction with which every moralist ought to regard it. Yet, after commending our reform in these instances, he next luxuriates in the contemplation of the bribery which still exists. Nor only so; he appears to entertain, on many grounds, a preference for bribery in its most direct shape. He looks back with no abhorrence to the times when money bribes were current; and he prefers to see members returned to Parliament by direct corruption, to their return "by the arts of the demagogue." Surely this is the most rampant Eldonism that ever yet existed. We notice these views, chiefly for their singular inconsistency. Why commend the reform which our patronage has already undergone, and nevertheless avow, or at least imply, a preference for the system which Walpole and Newcastle were the last to maintain?

Let us illustrate Lord Grey's conflicting positions. After justly condemning the personal influence acquired by the sovereign half a century ago, as tending unduly to strengthen, or insidiously to undermine the administration of the day, according to the predilections of the sovereign, the author criticises, in the following terms, the system of patronage which existed previously to the Reform Act:—

> "The means also by which the ministers of the crown were enabled to command the votes of a large number of members of the House of Commons before the passing of the Reform Bill, *had grown to be very injurious and onerous to the country.* So large a proportion of the whole House was then returned by the influence of burgh proprietors, and other powerful persons, instead of by our really popular election, that ministers were necessarily led to depend for the maintenance of their power, *less on meriting* the confidence and approbation of the nation, than on the support of those who possessed parliamentary interest, *which too commonly could only be purchased at the expense of the general good.* This evil seems to have been increased (so far at least as regards the burden upon the nation), instead of being diminished by the gradual discontinuance of the practice of giving direct money-bribes to the supporters of the government in the House of Commons; because bribes given in this form, from the votes for secret service, were not really more immoral, and were far less costly, than those, which were accepted in the form of jobs, and of places created, not for the public service, but for the benefit of the holders. But, apart from the means by which it was obtained, the command of a considerable number of votes in the House of Commons, by the ministers, *was highly useful, and its continuance would have been an advantage,* as conducing to the firm and vigorous administration of affairs, if it had been preserved in such a manner as to be enjoyed by the advisers of the crown in virtue of their offices, irrespective either of court favour or of those sinister influences, to which they were compelled to submit in order to secure it."—(Pp. 97, 98).

The civil service forms so important an element in the general question of parliamentary government, that it is hardly possible to exclude a brief view of the reform of patronage which has already taken place, from a discussion of the subject. We shall quote Lord Grey's lucid view of the abuse of patronage during the last century:—

"So lately as the reign of George III., not only were places and pensions bartered without shame for political support; but the dismissal of officers in the army or navy for votes given in the House of Commons, was occasionally resorted to, and there were even instances of the removal of public servants from situations now regarded as permanent, for the avowed purpose of punishing their friends and relations, for having pursued in Parliament a line of conduct obnoxious to the minister. . . . . .

"Formerly the appointment and promotion of naval and military officers was made almost openly a matter of mere favour. No rules existed prescribing certain periods of service in the lower ranks of the army and navy before the higher ones could be obtained; and nothing was more common then to see men rise through political influence to the command of regiments and ships of the line, with scarcely any service or knowledge of their profession to recommend them. There are now very strict rules as to the time that officers must serve in different ranks before they can be promoted; and it is universally recognised as the duty of those intrusted with the power of the crown, to be guided in the distribution of promotion and professional employment in the army and navy by the rules of the service and the merits of officers."—(Pp. 159, 160.)

We turn from this picture of glaring abuse, which we believe to be accurate, to Lord Grey's view of the change that has gradually been introduced during the last forty years:—

"A ministry, even if inclined to act corruptly, would no longer dare to abuse the military and naval patronage of the crown for that purpose, since it is certain that far more would be lost than gained in the attempt.

"The change which has taken place is not confined to the army and navy. The civil patronage of the crown has been greatly reduced by the many economical reforms effected since the peace of 1815, and especially since the reform of Parliament in 1832; and some of the abuses, which were formerly not uncommon, have been rendered impossible by the system now firmly established as to the tenure by which all civil offices are held, except what are called political offices. . . . . .

"In most of the public departments a regular order of succession has been established, so that by far the majority of the higher permanent offices in the civil service are filled up by the appointment of persons who have been gradually advanced to them from its lower ranks. . . . . .

"Errors of judgment are no doubt frequently committed in performing the very difficult duty of selecting public servants for advancement; but the most common error, according to my observation, is that of giving undue weight to senority, and too little to ability and merit, *from fear of incurring the suspicion of partiality.*"—(P. 160–162.)

Here, then, we come back to Lord Grey's inveterate fallacy—the *status quo!* In his original premiss, the flagrancy of corruption half a century ago, we fully acquiesce. To his consequent premiss, the justice of the present system, we unequivocally demur. It is thus that Lord Grey would close the door against further reform in every quarter. And it is an instance, not a little amusing, of the manner in which politicians fail rightly to understand the public reputation which they bear, to read this ingenuous apprehension from a former minister, whose very name had become a byword to signify the most systematic nepotism. The civil servants, who are here distinctively alluded to, undoubtedly rise by senority, according to a usage which no minister could disturb, without bringing a hornet's nest about his ears. But this class involves but a very small section of the appointments which, before the introduction of the examination system, were in the unconditional gift of the minister of each department. The clerkship in all the offices rise by seniority; and it is impossible for any minister to claim credit for not disturbing an established custom. But the original appointments to those very clerkships—and the appointments to all other posts which are stationary and not progressive—rest with the minister; and we have yet to learn that any minister—most especially Lord Grey—has enjoyed the repute of bestowing them according to any strict sense of duty. It was commonly said, with a certain exaggeration which simply springs from the real foundation of the statement, that when Lord Grey presided at the Colonial Office, nearly every person in authority throughout the colonies, bore his name.

It is not surprising that this conflict between reasoning and preconception, should bring Lord Grey into an indefensible position. Where he writes as a speculative politician, his deductions are just and sound. Where he writes as a prejudiced bureaucrat, they are wholly irreconcileable with his first position. Ready to disavow iniquities that are gone by, and yet anxious to retain corruptions that survive, he is, of course, directly opposed to the great question of Competitive Examinations. This subject is directly allied with Lord Grey's argument on a "strong Government." He would, at this day, strengthen government at all costs; and he would, therefore, preserve patronage unshackled, as an element of parliamentary corruption. Now, we have already said that we hope to witness the introduction of a scheme of reform which, while it shall free the House of

Commons from the influence of faction, shall also dispense with every pretext for the necessity for any other ministerial support than may be given by members of the House of Commons on intrinsic grounds. No argument can then survive for the exclusion of merit as a claim to public employment.

But let us note how Lord Grey shifts his ground when he approaches the subject of Competitive Examinations. He here opposes the alienation of the present patronage of government, on the ground that it will abolish their privilege of giving rewards :—

> "For these reasons it may well be doubted whether a better class of public servants than we now have would be now obtained by competitive examinations; and I do not hesitate to express my decided opinion, that another, and probably the principal object aimed at by those who recommend them—namely, the reduction of the patronage of the government—would be productive of injury instead of advantage to the nation. No government can adequately perform its functions unless it possess the power of reward as well as that of punishment; since, if punishment is necessary to enforce obedience to its commands, reward is the great instrument by which it can call forth zealous and able services."—(P. 179.)

Lord Grey here confounds the whole principle in dispute, and begs the whole question at issue. We will first, however, attempt to dissipate the doubt which rests upon his mind, whether the class of civil servants which we shall obtain by means of competitive examinations will be superior to those which we already possess, by simply pointing out to his lordship's notice, that under the ordinary "pass" examinations which have lately been established, *nearly one-third of the nominees of government have been excluded for total incompetency.* It is to be presumed that an equal proportion of incompetents were actually appointed previously by the "pass" examinations. If an ordinary examination produce this beneficial scrutiny, *à fortiori*, a competitive examination will do so.

Passing, therefore, from the refutation of this fundamental fallacy, we turn to Lord Grey's position on the subject of giving "rewards." Now it happens that this author has just before, as we have shown, defended government patronage on a ground entirely antagonistic to that of giving rewards. He has defended it on the ground of *corruption.* He has asserted, too, that the "whole strength of government" rests in the exercise of its patronage with a direct view to parliamentary support. If there is this enormous incentive to the corrupt exercise of the patronage which ministers hold, what security can exist for the faithful recognition of national services, and for the distribution of rewards?

But apart from the just apprehension—which daily experience tends merely to strengthen—that patronage retained under the specious plea of rewarding merit, will be diverted to the purpose of securing parliamentary support, the fact is, that even if no such apprehension existed, there would be no argument against competitive examinations. Lord Grey's great error on this point rests in the fact, that he commingles all classes of patronage. The hypothesis of "giving rewards" is so happy a plea for the maintenance of patronage, that its author fails to perceive that civil offices are already marked out into classes which admit of the attainment of both objects. We may, perhaps, divide government patronage into four classes. There exists, first, that class, the duties attached to which are simply mechanical. This is the lowest grade of official employment. We would, therefore, leave this class of patronage in ministerial hands. Indeed, it would be impossible to subject candidates for these posts to any examinations which could be a test of their competency. The second and intermediate class of patronage is, that vast class of subordinates offices which is made the chief means of parliamentary corruption. This class includes the clerkships of all revenue departments, and a great variety of other such offices under the control of the Treasury. These are offices in which subordinate mental qualifications are required. The third class of patronage differs from the second only in the fact that it is chiefly distributed, not for parliamentary support, but for private friendship. These are the corresponding subordinate offices in each of the departments not connected with the Treasury, and they are in the gift of the minister of each department.

These two classes of offices are pre-eminently such as ought, in a great degree, to be open to competitive merit. There is no reason to restrict the government from the right of patronage in some instances. But what renders Lord Grey's argument on the subject of "rewards" pre-eminently inapplicable, is, that these are offices which can scarcely ever be bestowed with such a view. These are offices, chiefly rising by seniority, and conferred originally on young men of twenty, who have served in no other public capacity, and have no other merit than competency to prefer.

The fourth class of offices,—or those of a more valuable kind, such as Commissionerships and Secretaryships—is the only one to which Lord Grey's argument can refer. And we believe that, as a matter of fact, this class of patronage has less frequently been prostituted for parliamentary support. It would be difficult, too, to institute competitive examinations for men of mature age, and who commonly are either barristers of a certain standing, or men possessed of some real guarantee for their ability, which has served to recommend them to the minister of the day. We could point, for example, to three well known writers, who, during the last two years, were appointed to high civil offices through the agency of the late Chancellor of the Exchequer, "with a love for the craft." If therefore the highest and the lowest class of patronage were allowed to remain undisturbed, the remaining classes might be redeemed from nepotism and parliamentary corruption, without appreciably lessening the privilege of government in giving rewards.

It probably has never struck Lord Grey, who regards patronage as the vital element of administrative stability, that, if it were once known that government possessed no patronage, members of the House of Commons would soon cease to expect any such reciprocity for their votes. Where nothing exists, nothing can be demanded. Nor does it appear to us, by any means probable, that the cessation of this recompense to members of Parliament for their votes, would at all affect the fidelity of their support of the minister. When constituents are aware, that a certain patronage is to be obtained for them, by their representative, in return for parliamentary support, they will of course press their demands upon him. And it is in consequence of *their* solicitation, that he makes his support of the minister a covert bargain. But, when those constituents know that offices are given, not by jobbery, but by merit, they will educate their children in place of jobbing with their representative.

What is not less conclusive against Lord Grey's view of the necessity of parliamentary corruption, is the fact, that it has always been partial in its operation. Members of Opposition have been excluded from all share in ministerial patronage. Yet, it happens that, except in peculiarly adverse circumstances, a leader of opposition keeps his party together, nearly as well as a leader of the government.

The truth is, that the moral improvement of politics has always been in arrear of the moral improvement of society. Where government reforms, it reforms under the pressure of a great social change. This improved morality first rose up against the open corruption of money-bribes. Such a reform, it might easily be shown, was vigorously disputed a century ago, by men equally in arrear of their generation with Lord Grey. The changes made by Parliament since the peace of 1815, have been the result of the same external pressure. It is hardly surprising, therefore, that when society in our own day, rises against the venality which we have witnessed, and indicates new methods by which government may be sustained, a champion of the old system rises in the old panoply. Lord Grey, indeed, here solves the problem against himself. He tells us, with great candour, that money-bribes are "less costly," and "less dangerous," than bribes of office. But the country has long decided against money bribes. Therefore, by the plainest induction, it has decided virtually against bribes, even more "costly" and "dangerous."

There is a second class of corruption, which assumes too great a prominence in Lord Grey's work, to admit of our passing it in entire silence. Corruption, briefly distinguished, is of two kinds —that which takes place within, and that which is maintained without, the walls of Parliament. There is the bribery of representatives with office by ministers and their supporters, and there is the bribery of constituents with money, as well as office, by candidates for seats in Parliament. The logical process by which the law arrives at the declaration, that the one kind of bribery is moral, and the other immoral, is certainly by no means clear. But we take the law as we find it; and Lord Grey, who supports the in-door corruption by means of patronage, views with a strange leniency the out-door corruption by means of votes. It is true that the author maintains that "one of the objects of the new Reform Bill undoubtedly ought to be, to guard as far as possible against corruption." But he goes on in the same breath to ridicule the bribery laws, and plainly to avow his preference for bribery as compared with "demagogue arts:"—

> "It would be a delusion to flatter ourselves that this can be easily accomplished, or that the evil can be eradicated by penal laws, such as that which was passed a year or two ago against bribery. Little advantage can, I think, be anticipated from legislation of this kind. The penalties of the new Act are very severe, and it gives powers of a highly inquisitorial character for the detection of the offence; but it does nothing either to diminish the desire for seats in Parliament, in men who are willing to spend large sums of money to attain them, nor yet to take away, from those who have the power of disposing of these much coveted seats, their inclination to make this privilege the means of advancing their own private interests."—(P. 117.)

As it would appear from this paragraph, that Lord Grey has in view some more effectual preventative against bribery than that of a penal law, it is greatly to be regretted that he should hoard his secret. Until the country is favoured with a revelation of it, we believe it will not rescind that penal law. Indeed, if Lord Grey had thought twice over this proposition, he would hardly have asserted that the Act against Corrupt Practices was inoperative, since that Act is our sole protest against an immoral bargain for a seat in Parliament, and since it affords the defeated party a means, which their very instinct prompts them to adopt, of scrutinising the sources of their opponent's majority. An Act under which it was ascertained last year that Mr Neate's election for the city of Oxford had been attained by the bribery of 170 voters, under the guise of electioneering paid messengers—an Act, under which it was ascertained that one of the members for Ipswich had obtained a vote by allowing a tenant to hold his tenement without rent until after the forthcoming election—(and these are mere illustrations of its general operation) can hardly be regarded as inoperative.

It is vain, therefore, to decry the Bribery Law, either as a theoretic protest or as a practical bar. No doubt, the law may not meet all contingencies: what law ever did? But it is clear that, without its aid, Parliamentary government would soon become a sink of corruption which would destroy its own existence.

But the following passage contains the gist of Lord Grey's opinions on the subject of bribery:—

> "To give money bribes to electors is not worse, or rather not nearly so bad, as to court their favour by flattering their passions and prejudices, and by encouraging them knowingly in mischievous political errors. More guilt is incurred, because far greater injury is done to the nation, by having recourse to the arts of the demagogue, than by the illicit use of money for the purpose of carrying on an election; and at the present moment the former abuse seems more common than the latter."—(P. 120.)

We will not do Lord Grey the injustice to suppose that he really would prefer to see every seat in Parliament bought by wealthy electioneers, rather than see "demagogues" insincerely declaiming from every hustings. This, however, is the literal meaning of the paragraph we have just quoted. But there is even a prior objection to be taken to this argument. Lord Grey implies that the wealthy class and the demagogue class, are necessarily opposed to each other. This we gravely doubt. Demagogues, as we have often seen, can obtain plenty of money when they aggregate for any distinct political purpose; and they are peculiarly the class who would devote the wealth they might possess, to political objects. It may be questioned, therefore, whether the same class of men who now appear on the hustings as demagogues, would not, if the bribery laws were swept away, re-appear (and with substantially the same opinions) as corruptors of the constituency by bribes. We believe, also, that the British people are too well alive to the influences of education, to experience the danger which Lord Grey apprehends from the oratory of prejudiced and superficial declaimers.

Thus far we have followed Lord Grey through his exposition of the principles of Parliamentary Reform. Its practical value, as a subject of criticism at this time, rests upon the directness of its application to the forthcoming Parliamentary Reform Bill; and we have endeavoured to choose those subjects for inquiry which bear the closest relation to the expected measures. Now that we have thus far glanced at the salient characteristics of the existing system, we propose to point out the classes of reform which are peculiarly urgent.

Whatever may be the extent to which a discussion of this question may be carried during the present session of Parliament, it is at any rate clear, that the measure will become a great point of party strife. Lord Grey, indeed, plainly ignores this certainty. He writes with the *naïveté* of a cloistered theorist, who had never mingled in Parliamentary discussion :—

> "If I might hazard a suggestion on the subject, I would venture to recommend that the Queen should nominate a committee of her Privy Council, composed of members taken from different political parties, to consider and report what measures of reform ought to be adopted."

Unfortunately, we are not living in an eutopian age, in which men desirous of power will forego their prospects in so self-denying a manner; and it is surprising that a statesman, whose notions of parliamentary patronage run so fixedly in the old ruts, should thus ignore a ground of party strife which has been so long anticipated. It is true that Lord Derby's declaration for further reform has apparently committed all parties to the general principle. But we doubt very much whether Lord John Russell is prepared to adopt the same views of the direction which this reform should take with the present ministry; and we doubt still more, whether the Whig party in the House of Commons have not already pre-determined to eject the Conservatives from office on this very question. At any rate, it is clear that Lord Grey's proposal would be no more allowed, if adopted, to circumscribe party action, than the German Federal Council at Frankfort succeeds in circumscribing the policy of each component State.

Indeed, it may almost be said, that parliamentary war has already been declared on this subject. Last year Mr Disraeli, at a "farmer's ordinary" at Newport-Pagnell, announced his determination to seek, in the expected measure, a mode by which the Conservative party might recover a portion of their lost influence in the House of Commons. Since his accession to office, he has but equivocally denied the statement charged upon him by another member of the House, "That the Reform Act of 1832 was a gross Whig job." Lord John Russell, in retort, went so far as to say, that "he had no sort of confidence in a Bill of the Right Hon. Gentleman's concocting." It is pretty clear, therefore, that we have not yet so far shaken off the tradition of party warfare as to bind ourselves to Lord Grey's scheme.

There is good reason to believe that a new reform, accomplished at this time, may possess the character of finality, which Lord John Russell vainly hoped that he had impressed upon the Act of 1832. The period is one in which there are no democratic passions to satisfy, and no inveterate prejudices to contest. The national reasoning on this question appears equally calm and just. What is proposed is, to rectify the defects in our constitution, which the nation perceives with an unbiassed judgment, and with the experience of a quarter of a century since it underwent its last reform. Indeed, the practical lawyer can wonder even less than the politician, at the necessity for a revision of the Reform Act. He is well versed in the defects of nearly every modern Act of Parliament; and he knows that there is scarcely a single Act introducing any important reform (even where no party feeling has arisen to distort its provisions), which has not been amended by an auxiliary Act, within a much shorter period than intervenes between our own day and the year 1832. While there are necessarily many points which will be chosen for a trial of party strength, there are, we believe, others on which all classes now entertain more unanimous, though less strong convictions, than ever were entertained in 1832.

What we apprehend to be now requisite, is at once to render the House of Commons a more exact reflex of the social estate than it is at present; and to correct the inequalities of the representation, without increasing the democratic element. Now the distinctive enfranchisement of the EDUCATED CLASSES is just that principle which will absolutely harmonise with, and will, in a certain degree, satisfy both these conditions. Perhaps the justice and the moderation of a demand for reform taking this shape may be assumed, if only from the fact, that the Primate of all England is at the head of this class of Parliamentary Reformers. Our readers may probably remember the Memorial lately signed by nearly every person of intellectual consequence in Great Britain (the Archbishop of Canterbury at their head), praying for the enfranchisement of those who possessed distinct claims on the score of education. We believe this to be the most popular of the subjects into which the question of reform now divides itself. We shall first, therefore, endeavour to show the relation of this principle to the principle on which the Reform of 1832 was based.

It was, in our view, the cardinal error of the Reform Act, that it recognised conditions of enfranchisement by much more uniform than had any correspondence in the character of the people. Throughout the boroughs—in other words, throughout the major part of the constituencies—it established a nearly uniform *ten pound* qualification for the suffrage. There is no doubt that, by this principle, the authors of the Act endeavoured to recognise educational qualifications. It was obvious, that a person renting a house of this value, had a certain visible interest in his borough; but it was presumed, also, that such a person possessed a certain invisible qualification on the score of education. The occupier, therefore, of a house rented at ten pounds a year, was held to be, in a certain degree, educated, as well as to have a certain material interest at stake.

But there were here two questions to be solved: Is this qualification a sufficient guarantee for the amount of education which may be deemed requisite for an election? and if it be, Do the visible and the invisible qualification (the householding and the instruction) so far coincide, that nearly every educated person would fall within the class of householder? Now, we shall not quarrel with the decision of the Reform Act on the first of these questions. We are ready to acknowledge that by far the greater number of instances of venality, which have been brought to light in borough elections, have implicated the freemen, who have continued to vote under the old system, without reference to their householding. The class of ten pound householders, however, though they have undoubtedly been by much less venal, may not have by any means comprised the more educated of the middle classes. But it may be gravely doubted whether the Government of the late Earl Grey really expected this class to consist of decently educated persons, according to the theory of their legislation. For in a speech of Lord Chancellor Brougham, when the Reform Bill was before the House of Lords, it was admitted that *it was the original design of the government to limit the borough franchise to "twenty pounders;"* but that they were compelled to deviate from their intention, by an apprehension that the proportion of electors to inhabitants would, in that event, be so small, as virtually to transform the large boroughs into Gattons and Old Sarums. This statement does not appear to us to have attracted the attention which it merits; for it is a confession that Lord Grey's Government halved their intended qualification for the suffrage, on grounds which had no reference to education; and, indeed, it implies, that they abandoned the educational element of the question in deference to popular agitation.

It will be seen that this concession has a direct reference to the proposal made by Lord John Russell, when the organ of Lord Aberdeen's Government, in 1854, to reduce the borough qualification from *ten* to *six* pounds. This proposal was probably the dictate of a compromise between the Liberals, who were generally desirous of retaining the L.10 qualification, and those who attempted to reduce it to L.5. Lord Palmerston's cabinet, however, subsequently announced themselves, through a semi-official channel, averse to a reduction of the L.10 qualification.

We have indicated, then—in answer to the first of the two questions which we suggested a moment ago—that, even now, the L.10 qualification, introduced in 1832, barely affords a guarantee of the educational competency of the elector. We turn, then, to the second question, and unhesitatingly answer, that the householding and the educational qualification do not by any means, coincide; insomuch, indeed, that it is the tendency of the present uniform law to exclude a large proportion of those who are better qualified for the suffrage, by their education, than those who now enjoy it, in parallel stations of life.

We here would indicate two classes of defects in the representation. First, it happens that a large proportion of moderately educated men, and a certain proportion of even highly educated men, are not householders. They are, therefore, *ipso facto*, excluded from the representation; and, under the present system, the greatest *littérateur*, or the greatest lawyer in the country (if he did not happen to be a Master or Doctor in the Universities of Oxford, Cambridge, or Dublin, and chose to live in lodgings in London or Edinburgh, in preference to living in a house of his own renting), would have no vote whatever. Meanwhile, every publican renting a tenement at L.10 a year, would possess the electoral right, from which the most learned men of the day might be excluded.

It is only in extreme cases that such defects can be exceptional. We have said that the proportion of non-householders with greater intelligence and education than the L.10 householders, is very large. It is to be feared, however, that when we commence actual legislation on this subject, we shall experience some practical difficulty in conferring and restricting the suffrage *where there is no definite and visible qualification, by which we may generically demark the enfranchised from the excluded candidates for an educational suffrage.* At the same time, it is to be borne in mind, that the tendency of our social reforms favours the formation of these distinctions. The recent institution of the Cambridge "Middle Class Examinations" illustrates this tendency. It will be for the minister charged with the Bill to determine in what manner he may best give expression to this demand.

The question, however, of the educational classes to be enfranchised, is bound up with the second class of defects in their representation, which we have not yet indicated. This we regard as consisting in the want of *separate and distinctive* enfranchisement. With the exception of those voting within the three enfranchised universities, nearly every highly educated man who may vote under some material qualification in the borough or county suffrage, finds his opinions swamped, whenever they may be distinctive, in virtue of his education. There is, therefore, in such cases, no representation of his educational opinions. Barristers, for example, occupying chambers in the Inns of Court in London, each hold a vote, in virtue of their occupation, for the borough in which the Inn may happen to lie. But it is morally certain that their opinions are swamped among the thousands of ten-pound householders associated with them in each constituency. We say, therefore, as a *second* objection to the present state of educational representation, that, not only is education not recognised apart from a household qualification, but even where highly educated men possess the suffrage in the capacity of householders, their opinions are wholly lost in the mass with which they are mingled.

It is clear, therefore, that while we must enfranchise educated men *as such*, we must also (in some instances at least) give force to their enfranchisement by enrolling them into separate constituencies. This expedient, be it observed, must be carefully restricted to the higher classes of education, on the immemorial principle so long maintained by, yet so strangely restricted to, the Universities of Oxford, Cambridge, and Dublin. Lord John Russell wisely proposed, in 1854, to enfranchise the four Inns of Court in London. The expected measure cannot fail to make good this proposition. But why should the educational representation be arrested here? Why not enfranchise also the Universities of Edinburgh and Glasgow? Why not also associate less important seats of learning into federal representation, just as the constituency of second class boroughs is frequently swelled by its union with that of contributory boroughs around it?

We apprehend that, by this process, we shall fully satisfy the demand for educational enfranchisement *of the higher class*. The incidental hardship already felt by those absent from their universities, who must either travel to Oxford, Cambridge, or Dublin, or must forego their votes, is as much a question of detail as that of the academical standing which shall give votes within the university. This hardship may be rectified, by simply allowing each elector to vote in any part of the United Kingdom by deposition before a justice of the peace. The next question, therefore, which presents itself, is that of the mode in which the lower class of education is to be recognised in a new Reform Bill.

We have already said that, under the L.10 suffrage, there exists, theoretically, a double qualification, of which the one is express and the other implied. In other words, the direct household qualification presumes educational competency. Now, in the same manner, an educational suffrage may afford in theory just this double qualification in an inverted form. The direct educational qualification would itself presume the existence of certain material interests: for a person who has been educated, to a certain degree, may be supposed to be in equal pecuniary circumstances with a L.10 householder. It is on this ground that, while we desire the establishment of an educational suffrage, we hope to witness the suppression of the freemen, who hold electoral rights independently either of the houses they occupy or of the education they have received. The class of freemen is probably the most ignorant, and, if not the poorest, certainly the most venal, of all those which hold any distinct rights in the State. The reports of each election committee abound with details of their corruption. We have frequently found that they have organised themselves into bodies, with a view of forcing their mercenary support on candidates for the representation who may prefer bribery to defeat. We do not forget the ill-success which attended the efforts of Lord Melbourne's Government to disfranchise a large proportion of the freemen. But we believe that public opinion has widely changed on this subject during the last twenty years.

We apprehend that the class of "skilled artisans" will form one of those on whom it will be resolved to confer some electoral rights. Their intelligence, and the high wages they receive, justify the popular desire that the better class of them should be included in the representation.

Educational enfranchisement may be taken as illustrative of the inevitable tendency of the forthcoming reform to accept the general principles of the present constitution of Parliament, and to vary simply its detail. The broad distinction between the Reform of 1832, and that which is now anticipated, is ably drawn by Lord Grey in his ninth chapter :—

> "The great differences between the circumstances of the present time and those of 1831, ought not to be overlooked; nor the fact that, if another Reform of Parliament is now needed, it is not for the same reasons, and ought not to have the same objects, as the original Reform Bill. . . . . . .
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> "I make this assertion with confidence, because, even in the speeches of the most violent advocates for the passing of a new Reform Bill on democratic principles, I observe that few attempts have been made to show that the existing distribution of power has led to any injustice to the humbler classes of society, on the part of the Legislature. Far from this having been the case, it is notorious that Parliament, of later years, has shown in all its measures, and especially in its financial measures, a most anxious desire to promote the welfare of the working-classes. . . . . . These are facts of which it is most material that we should never lose sight, in considering the question of a new Reform Bill; since the only sound principle on which constitutional changes can be attempted, is that of directing

them to practical improvements of the Government, *and to the removal of evils that have been felt*, not to the gratification of men's passions or their love of change. But, if this principle is recognized, it follows that a new Reform Bill ought not, like the former one, to aim at the transfer of a large amount of political power from one class of society to another, since this is no longer necessary, in order to protect the general interest of the country from being sacrificed to those of a minority of its members."—(Pp. 126-28.)

We entirely concur in Lord Grey's view of the auxiliary character of the reform which is now requisite, though his concurrence in further reform of any sort is quite inconsistent with what we have before criticised; and we will deal with the existing representation in Scotland, as the most convenient illustration both of the changes and of the anomalies of the existing system.

It was in Scotland that the political agitation of 1832 was probably least intense; yet it was in Scotland that the most sweeping constitutional changes were introduced. In that country, the proportion of the constituents to the population was but *one in a thousand*. The nation then numbered 2,500,000, and the electors then consisted of 2500. The proportion of the constituents to the population in Scotland is at this day about *one in thirty-two*. The nation now numbers rather more than 3,000,000, and the electors now consist of nearly 100,000. In the whole of Great Britain, the proportion of the constituents to the population is at this day about *one in nineteen*. The registration of 1857 enrols 1,045,000 electors, from a population of about 20,000,000. Even in England, after the suppression of several classes of electors who possessed no just title to the suffrage, the representation was fully doubled by the Reform Act. The difference in the aggregate number of members returned by either country was inconsiderable; and in Scotland the representatives were simply increased from 45 to 53. But those representatives were thenceforth elected by nearly the whole middle class: they were previously the mere delegates of clanships in the counties, and of bureaucracies in the burghs. In the counties the old parchment freeholders implicitly followed their lord to the poll, and the constituency depended on a quasi-feudal claim of superiority, without reference to the possession of land. In the burghs, the elections rested with the self-elected town-councillors. This system, as our readers know, was replaced by the following arrangement:—The county electors were divided into two classes, namely, the owners of property of the yearly value of ten pounds, and the fifty pound occupying tenants. The burgh electors, with the exception of incidental anomalies, were all ranged under the class of ten pound householders.

This change, and the lapse of a quarter of a century, have together swelled the Scotch electors to a number *by forty times more numerous* than before the Reform Act.[1]

This hasty glance will suffice to indicate that the great work of *constitutional development* is already accomplished, and that the character of a new reform can be auxiliary alone. Although the illustration of Scotch reform may be an extreme one, the uniformity of the existing system throughout the United Kingdom, renders it generally applicable. We may therefore briefly pursue the illustration, by reviewing the anomalies in the distributive arrangement of the representation in Scotland, as generally incidental also to the whole representation of the United Kingdom.

While all sections in either House will concur, without doubt, in giving increased representation to INTELLIGENCE, it is probable that the relation of the county to the burgh representation will form the principal ground of party contest. It is certain that the Reform Act did not attempt to measure justice to these two great divisions of the population. Under the old system, there were in England three distinct classes of members. There were the county members, the *bonâ fide* borough members, and the nomination members. Of these, the latter were the largest division. The Reform Act, in sweeping away the nomination seats, with few exceptions, assigned the vacated places to the two former classes. The county representation in South Britain was increased from 94 to 159 seats. The *bonâ fide* borough representation was apparently increased from 264 to 341: from 141 nomination seats were suppressed, out of the total number of 405 borough seats of all descriptions existing for South Britain under the old constitution. At the expense, therefore, of 141 nomination seats, 65 seats were added to the counties, and 77 to the boroughs, in that country.

It was hardly to be expected that when democratic feeling ran so high, and the boroughs had so long sustained injustice, a greater concession should have been offered to the counties. It has been frequently maintained, however, by political partisans, that the Reform Act virtually diminished the representation of the counties, inasmuch as they were indirectly represented in the nomination seats. But this is a very doubtful assumption. It is very questionable whether the classes now enfranchised in the counties would generally side with the nomination holders in opinion, for these classes already profess more liberal opinions than the Conservative Peers. It must be remembered also, that it would be impossible to calculate the proportion of nomination boroughs which were habitually bought by the unfranchised towns; and that the Whig Peers, who held a certain number of boroughs, used them in the interest of the towns.

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[1] The Scotch Corporation Reform Act equally changed the municipal constitution of the burghs, by rendering the Parliamentary electors of each burgh its municipal electors also.

Nevertheless, the fact remains, that the borough population, in either country, is more largely represented than the county population, in a proportion of about *two to one.* In Scotland, where the change has been most sweeping, the injustice in the apportionment of town to country representation, is singularly least striking. There are twenty-nine members for counties, and twenty-four members for burghs. Meanwhile, there is a population of 2,000,000 represented by the twenty-nine county seats, and a population of only 1,000,000 represented by the twenty-four borough seats. But in England and Wales the disparity is greater. There are there 159 county, and 341 borough, seats. The county seats represent (according to the census of 1851) 10,980,000; while the borough seats, more than double in number, represent only 8,520,000. Some deduction from this immense disparity is to be made for those contributory boroughs which are united with larger boroughs, and are by position too distant from them to be included in the census of the principal boroughs. But, after this deduction, the disproportion would probably be found to approximate from two to one.

These figures are conclusive against the demands of that party which seeks to increase the proportion of borough representation; and there can be no doubt that if Mr Disraeli, as leader of the House of Commons, should attempt to carry out his cherished scheme of increasing the county representation, he will have the best of the argument, although the effort may, possibly, cost him his office. It is also to be observed, that England is more largely represented, in proportion to its population, than Scotland Five hundred English and Welsh members are returned side by side with only *fifty-three* Scotch. The Irish, it is true, are still more disproportionately represented than the Scotch, if population be the index of representation. But in Ireland, there are good reasons, on the score of religion, of intelligence, and of wealth, to destroy the test of numbers. Though Ireland, with *two-fifths* of the population of England and Wales, returns but 105 members to Parliament, there is no doubt that the class designed by the Reform Act to possess the suffrage, are, in proportion to the number of members, by much smaller than in Scotland. And as it requires no national egotism to believe that the Scotch are also, viewing them collectively, the most intelligent and the best educated of the three nations, it seems to follow, that Scotland possesses a pre-eminent claim to benefit by the expedient of educational enfranchisement, of which we have already treated.

We now pass from the question of *constituencies* to glance at that of *constituents*. There is a growing and, abstractedly, a just desire to equal, or at least, to approximate, the qualification for the suffrage in town and country. The Liberals loudly inveigh against the injustice of the "Chandos clause," which raised the county suffrage in the case of all "occupying tenants" to L.50, while the suffrage in the borough does not exceed L.10. We are ready to acknowledge that the injustice may be equal to the disparity. But the *extent* of the evil has been absurdly magnified. The complaints against this inequality indicate, that the "occupying tenants" are, at least, a large proportion of the county constituencies. No assumption can be more incorrect. We assert, on authority of the tabular views contained in the returns presented to Parliament during the last session, that the number of "occupying tenants" in each county, is, on an average, not more than *five per cent.* of the total number of constituents. It is true, that the class of lease-holders is divided into sections, of which the one is restricted to a L.50 qualification, while the other votes by the same L.10 qualification as the borough constituents themselves. The distinction between the two classes of lease-holding electors rests in the period of their leases. But if we add the L.50 lease-holders to the occupying tenants, the aggregate number of L.50 franchise holders does not exceed *fifteen per cent.* on the aggregate of the county constituents. The truth is, that the proportion of 40s. freeholders, in consequence of the subdivision in the ownership of the soil by political societies, is at this day so vast, that the Reform Act is now (paradoxical as the assertion may appear) nearly inoperative in regulating the constituencies of the English counties.

But one of the most important aims of a new Reform Bill, must be that of increasing the intelligence of Parliament itself. There is no doubt that in this respect the predictions of the Reformers of 1832 have been wholly falsified. It was confidently predicted, by these politicians, that the newly enfranchised boroughs would introduce rising talent. Although it may be thought a mere assumption of foresight to question such a prediction after the fact, we scarcely perceive on what ground it can have been entertained. The immense depreciation of parliamentary talent during the past quarter of a century, is a matter of fact beyond all dispute. Where is the Pitt, the Fox, the Burke, the Sheridan, the Grattan, and the Canning of this generation? Government, throughout this period, has been intrusted to mediocre peers, and baronets of wide estate, because no young men of genius alone can find their way into the House of Commons. This, we fearlessly assert, is the mere result of the suppression of parliamentary patrons, who were wont to encourage rising talent. Now, it is quite clear that the boroughs could never supply the function of the nomination holders, in spite of the confident assertion of Lord John Russell in 18[illegible]2. The boroughs have even preferred their own municipal worthies to those whom they have known to be capable of aiding in the government of the country. But if they had not been marked by this prejudice, it would obviously be very difficult for the boroughs to be acquainted with the talents of any man who had not already served his apprenticeship in some other seat. A youth of two or three and twenty, who has never moved in public life, can by no possibility be known to the constituency of a great borough; but his fitness for a seat in Parliament may be well discerned by a single nomination holder, with whom he may be acquainted. The increase of the great borough system has thus obstructed the introduction of rising talent, partly by prejudice and partly by sheer necessity.

We confidently look forward to the adoption of distinct educational enfranchisements, as one of the most available means at our disposal for the regaining of the beneficial effects which formerly accrued from the nomination system. In destroying the abuses of that system, we made, in 1832, no effort to preserve its incidental advantages.

As it has been our aim, in these observations, to deal with principles rather than with details, we shall not enter at any length into the minor questions of the relation of parliamentary seats to political offices. It has, for example, been proposed to make two great innovations upon usage. It is suggested that the law officers of the crown shall have a right, *virtute officii*, whether previously returned by any constituency or not, to speak in the House of Commons, and that members taking office shall not thereby vacate their seats. No doubt, these clauses would be very convenient for the ministers of the day. They would discourage noisy lawyers from entering the House in quest of advancement; and ministers would be subjected to no contingencies in themselves taking office.

It has been argued, on the first of these points, that the best lawyers are often not members of the House, and that government is compelled to accept the service of indifferent legal advisers. It happens, however, that the law officers are employed hardly less to defend the ministry in debate than to advise them behind the scene. The best lawyers are sometimes the worst debaters; and the presumption is, that an eminent lawyer, who speaks with effect, will enter the House for the development of his rhetorical powers. It is recorded of Lord Eldon, that he once said to George IV., of a great Chancery lawyer, who was a cripple, wrote an illegible hand, and could rarely deliver himself of an intelligible proposition except on paper, "the greatest lawyer in your Majesty's dominions can neither walk, nor write, *nor speak*." Such an adviser would hardly serve the purpose of an administration in the House of Commons.

We ourselves regard the necessity of re-election on the acceptance of office as the only precaution which a constituency possesses, under septennial Parliaments, for the conformity of its representative to the principles which he has advocated from the hustings. We know of no other preventative to the acceptance of office, and its tenure perhaps for four or five years, by any member, in direct opposition to his professions towards his constituents. And, we think, that a reversal of this law would open the door of corruption in various ways. No doubt, like every other law generally beneficial in its operation, it betrays incidental inconveniences.[1] While, however, we would urge the country to oppose the rescinding of this condition, we should cheerfully acquiesce in a revision of the complicated rule under which each minister, who exchanges one office for another, places himself under the same necessity of re-election, with the ministry who takes office anew.

We have here attempted to glance at the leading questions which now arrest public attention on the question of parliamentary reform. We part from Lord Grey, we hope, in courtesy, and, we are sure, in good will; and we trust that the example which he has set in the theoretical discussion of a political question of the day, will be followed, though with more earnest thought and more careful research, by other politicians to whom the country is equally predisposed to attend.

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[1] The refusal of office by Sir E. B. Lytton, under the present government, from a fear of defeat at the hustings of Hertfordshire, is a striking instance of this casual disadvantage.

ART. VII.—*The Collected Works of Dugald Stewart, Esq.* Edited by Sir WILLIAM HAMILTON, Bart. *With a Memoir of Dugald Stewart.* By JOHN VEITCH, M.A. Vols. I.–X., 1854–58. Edinburgh: Thomas Constable and Co.

EVER since the decease of Dugald Stewart, now nearly thirty years ago, there has been a strong desire felt by many to have a memoir of him. This feeling has rather been increased by the circumstance, that those who never saw him have been able to form a very dim idea of the man, and of his character. He ever flits before our phantasy as an author or a professor; we see him walking up and down, cogitating a lecture, or dictating an essay; or we get a glimpse of him gliding through the college courts, or addressing a reverential body of students in the class-room. He is not one of those authors who throw their individual heart into their writings, so that their works are their fittest memoir. On the contrary, he keeps himself at a dignified distance from his readers, and seldom lays aside his classical stateliness.

It seems that his son, Colonel Stewart, had prepared an account of the life and writings of his father, together with his correspondence with eminent individuals, and anecdotes from his journals. But, during his military service in India, Colonel Stewart had suffered from an attack of *coup-de-soleil*, which affected his intellect, and, in a rash moment, he committed to the flames the biography, as well as several papers by his father. The following letter, dated Catrine, 1837, to a publishing house which had inquired after this literary property, will be read with a melancholy feeling, as coming from the son of such a sire, and as illustrative of a topic on which the father had often dwelt, the dark cloud which for ever settles on the border country of mind and body.

> "You need not further trouble yourself on this head, because, finding myself getting on in life, and despairing of finding a sale for it at its real value, I have destroyed the whole of it. To this step I was much induced by finding my locks repeatedly picked during my absence from home, some of my papers carried off, and some of the others evidently read, if not copied from, by persons of whom I could procure no trace, and in the pursuit or conviction of whom, I never could obtain any efficient assistance from the judicial functionaries. As this may form, at some future period, a curious item in the history of literature," etc., etc.

Every one rejoiced, in these circumstances, to find it announced that, in this edition of the collected works, there was to be a memoir of him by Sir William Hamilton, the metaphysician who occupied in this last age the high place which Stewart did, in a previous age. It turned out that Hamilton was obliged, from failing health, to depart from the idea of writing an original and connected narrative, and was to confine himself to a collection of materials, with notes and observations on Stewart's philosophy; and even this design was frustrated by his lamented death. We are grateful, in these circumstances, that we have now at last a memoir of Stewart by Mr Veitch, one of Hamilton's most promising pupils, and already favourably known by his translations, with notes, of portions of Descartes.

The biographer has taken a high standard, and has reached it. This is no other than the memoirs of Smith, Robertson, and Reid by Stewart himself, who again seems to have taken as his model the Eloges of the French Academicians. Still, this dignified and rose-water style of biography is not after all the highest; as Stewart's admiring pupil, Francis Horner, remarks of him,—"his conceptions of character, though formed with comprehensive design, want that individuality to which the painter of portraits must descend." It is evident throughout this life of Stewart, that the painter has been at pains to collect reminiscences from a variety of quarters, and that he has made a judicious combination of them, but it is just as clear that he has not seen the original. He has given us a wonderfully good likeness; but it is of the professor in his gown, rather than of the man in his inner and domestic life,—his heart—his conscience—and his religious experience. This we suspect is an unavoidable deficiency, arising not only from the want of materials, but mainly from the peculiar character of Mr Stewart himself. It is easiest to seize a likeness when the features are marked; but Stewart's mental character was distinguished for its regularity and its fine proportions, and was without prominences or excesses of any kind. Besides, while Stewart had no doubt a liberal heart, he contrives to keep it very much folded up from our view in his writings, and in any recorded conversations or letters preserved to us. That we should not have a living family portrait is no fault of the biographer, who has done his part with industry, integrity, and judgment, and has given us a memoir characterised by clearness and accuracy of narrative, elegance of style, and a fine philosophic spirit. We rather think that this is precisely such an account as Stewart would have wished preserved of himself, and that he would have shrunk from a more searching anatomy of his inward motives, and declined a fuller narrative of incidents, which might have exhibited his infirmities.

Dugald Stewart was born in the Old College buildings, Edinburgh, on Nov. 22, 1753. His father was Dr Matthew Stewart, at one time minister at Roseneath, and afterwards successor to Maclaurin in the mathematical chair in Edinburgh, and still known as one of those British mathematicians, who were applying with great skill and beauty, the geometrical method, while the continental mathematicians were far outstripping them by seizing on the more powerful instrument of the calculus. His mother was the daughter of an Edinburgh Writer to the Signet. He was thus connected on the part of his father (and also of his grandfather, who had been minister of Rothesay), with the Presbyterian ministry, and on the part of his mother with the Edinburgh lawyers—the two classes which, next to the Heritors, held the most influential position in Scotland.

Dugald was a feeble and delicate infant. He spent his boyish years partly in Edinburgh, and partly in the maternal mansion house of Catrine, which we remember as being, when we paid pilgrimage thither a number of years ago, a whitewashed, broad-faced, common-place old house, situated very pleasantly in what Wordsworth calls expressively the "holms of bonnie Ayr," but unpleasantly near a cotton mill and a thriving village, which, as they rose about 1792, destroyed to Stewart the charms of the place as a residence. Stewart entered, at the age of eight, the High School of Edinburgh, where he had, in the latter years of his attendance, Dr Adam for his instructor, and where he was distinguished for the elegance of his translations, and early acquired that love for the prose and poetical works of ancient Rome, which continued with him through life. He entered Edinburgh College in the session 1765-66, that is, in his thirteenth year. We remember that Bacon, David Hume, Adam Smith, Thomas Reid, and many other original-minded men, entered college about the same age; and we are strengthened in the conviction, that in order to the production of fresh and independent thought, it is of advantage to have the drilling in the ordinary elements, all over at a comparatively early age, and then allow the mind, already well-stocked with general knowledge, to turn its undivided energies to its favourite and evidently predestinated field; and that the modern English plan of continuing the routine discipline in classics or mathematics till the age of twenty-two, while well-fitted to produce good technical scholars, is not so well calculated to raise up great reformers in method and execution. What the Scottish Colleges have to deplore, is not so much the juvenility of the entrants—though this has been carried to excess—as the total want of a provision for bringing to a point, for carrying on, for consolidating and condensing the scattered education which has been so well begun in the several classes. But to return to the college youth, we find him attending, among other classes, that of Logic under Stevenson, for two sessions, that of Moral Philosophy under Adam Ferguson, that of Natural Philosophy under Russel, and from all of these he received a stimulus and a bent, which swayed him at the crisis of his being, and abode with him during the whole of his life.

After finishing his course in Edinburgh, he went to Glasgow in 1771, partly by the advice of Ferguson, that he might be under Dr Thomas Reid, and partly with the view of being sent to Oxford on the Snell Foundation, which has been of use to many students of Glasgow, but has in some respects been rather injurious to the college, as it has led many to ascribe to it the mere reflected glory of being a training-school to higher institutions, whereas Glasgow should assert of itself that it is prepared to give as high an education as can be had in any University in the world. The youth seems at this time to have had thoughts of entering the Church of England; and if he had gone south, we can conceive him rising to as high a dignity as a Scotchman sent to Oxford on that foundation, has reached in our day, and, in that event, he would no doubt have discharged the duties of the Episcopal office with great propriety and dignity. But a destiny better suited to his peculiar character and gifts, was awaiting him. In the autumn of 1772, that is, when he was at the age of nineteen, he became substitute for his father in the chair of mathematics in Edinburgh. It is precisely such an office as this, a tutorship or assistant professorship, that the Scottish Colleges should provide for their more promising students; an office not to be reserved for sons or personal friends of professors, but to be thrown open to public competition. This is the one thing needful to the Scottish Universities, to enable them to complete the education which they have so well commenced, and to raise a body of learned youths, ready to compete with the tutors and fellows of Oxford and Cambridge. In 1775 Mr Stewart was elected assistant and successor to his father; in 1778, on Professor Adam Ferguson going to America as Secretary to a commission, he, upon a week's notice, lectured for him on Morals; and in 1785, Ferguson having resigned, Stewart was appointed to the office for which he was so specially fitted,—to the chair of Moral Philosophy in the University of Edinburgh.

We pause in the narrative, in order to look at the circumstances which combined to influence the youth, to determine his career, and to fit him for the good work which he performed. First, we have a mind not, certainly, of bright original genius, or of great intellectual force, but with a blending of harmonious qualities, a capacity for inward reflection, and a disposition toward it, a fine taste, and consummate judgment. From his youth he breathed the air of a college. He was early introduced to Roman literature, and made it his model. Stevenson used

Wynne's Abridgment of Locke's Essay as a text-book, and from it the student may have caught the fresh and observational spirit which Locke had awakened, while, at the same time, he was kept from what Cousin describes as the common defect of the British philosophy—being "insular"—by the other text-books employed, namely, the "Elementa Philosophiæ" of Heineccius, and the "Determinationes Ontologicae" of De Vries, works which discussed, in a more abstract and scholastic method, the questions agitated on the Continent posterior to the publication of the philosophy of Descartes. A still greater influence was exercised over the youth by Ferguson, who, with no great metaphysical ability, but in an altogether Roman, and in a somewhat Pagan manner, discussed, with great majesty and sweep, the topics—of which the pupil was ever after so fond—lying between mental science on the one hand, and jurisprudence on the other. From his own father, and through his own academical teaching, he acquired a taste for the geometrical method, so well fitted to give clearness and coherency to thought, and to teach caution in deduction. He thus became one of those metaphysicians (and they are not few) who have been mathematicians likewise, in this respect resembling (not to go back to Thales, Pythagoras, and Plato, in ancient times) Descartes, Leibnitz, S. Clarke, Reid, and Kant. In the class of Natural Philosophy he was introduced to the Newtonian physics, which had been taught at an early date in Scotland, and caught an enthusiastic affection for the inductive method and for Bacon, which continued with him through life, and is his characteristic among metaphysicians. But the teacher influencing him most, and indeed determining his whole philosophic career, was Thomas Reid, who, in a homely manner, but with unsurpassed shrewdness, and great independence and originality, was unfolding the principles of common sense, and thus laying a foundation for philosophy, while he undermined the scepticism of Hume. Stewart has found in Reid the model instructor, and it may be added, that Reid has found in Stewart, the model disciple. This whole course was an excellent training for a metaphysician; it would have been perfect if, along with his knowledge of natural philosophy, his somewhat dull apprehension had been whetted by an acquaintance—such as that of Locke in an earlier, and that of Brown in a later, age—with the more fugitive and complicated phenomena of the physiology of the body; and if, in addition, his over-cautious temper had been raised heavenward by an intimacy with the lofty spirit of Plato, or, better still, by an appreciation of the deep theological discussions which had collected around them so much of the English and Scottish speculative intellect of the two preceding centuries.

Like every other man not altogether self-contained, Stewart must have felt the spirit of his age, which, as coming in from every quarter, like air and sunshine, commonly exercises a greater influence on young men than individual teachers can possibly do through the special channels open to them. Hume had stirred the thoughts of thinkers to their greatest depths; and this was now the age in which Hume had to be met. Stewart was born fourteen years after the publication of the great sceptical work of modern times, the "Treatise on Human Nature;" and two years after the publication of the work from which all the debased modern utilitarianism has sprung, the "Inquiry Concerning the Principles of Morals." At the time when the youth was forming his convictions, Hume was living in Edinburgh, and the centre of an influence radiating round the man, who was a mixture of the lively, good-natured animal, and of the intellectual giant, but with a terrible want of the high moral and spiritual. The original disposition of Stewart did not tempt him to daring speculation; his domestic training must have prepossessed him against infidelity; and he had been placed, in Glasgow, under the only opponent worthy of Hume, who had appeared; and so these earthquake shocks just made him look round for a means of settling fast the foundations of the temple of knowledge.

Locke's philosophy had been the reigning one for the last age or two. Mr Veitch speaks of the "tradition of sensationalism, which the Scottish universities during the first half of the century, and up to the time of Reid, had in general dispensed in Scotland." This statement is too sweeping: for, first, Locke had given as high a place to reflection as to sensation; and, secondly, he had given a high office to intuition; while, thirdly, Locke's philosophy had not been received in Scotland without modification, or in its worst aspects, as it had been in France. Stewart, like Reid, entertained a high admiration of Locke, and was unwilling to separate from him, but he saw at the same time the defects of Locke, and that there were fundamental laws in the mind which Locke had overlooked, or only incidentally noticed. In Glasgow he must have felt the influence left behind by a train of eminent men. There Hutcheson had been the founder of a school, afterwards called the Scottish school. We know that this honour has been claimed for his predecessor in the ethic chair, Gerschom Carmichael, the editor of Puffendorf, and the author of a little Treatise on Natural Theology: we have looked into his works, and are persuaded that he exercised an influence on the mind of Hutcheson, who was his pupil, but it must have consisted mainly in connecting him with the old and more abstract philosophy of the schoolmen, and of the Continent, and in keeping him from falling altogether into the experiential method of Locke. In addition to the external and internal sense of Locke, Hutcheson had called in a moral sense—a very inadequate account we grant—but still containing a truth, inasmuch as it represented moral good as discerned by an original and distinct moral power. In Glasgow, too, Adam Smith had expounded those original views which he afterwards published in his "Theory of Moral Sentiments," and his "Wealth of Nations." In Edinburgh, James Balfour of Pilrig, who was Professor of Moral Philosophy in the University from 1754 to 1764, had opposed Hume's ethical views, on grounds, however, which do not give morality a sufficiently deep foundation in the constitution of man or character of God. He begins his "Delineations of the Nature and Obligations of Morality," with the principle, that private happiness must be the chief end and object of every man's pursuit, shows how the good of others affords the highest happiness, and, in order to sanction natural conscience, he calls in the authority of God, who must approve of what promotes the greatest happiness. But, in his "Philosophical Essays," he opposes the theory which derives our ideas from sensation and reflection. "It may indeed be allowed that the first notions of things are given to the mind by some sensation or other; but then it may also be true, that after such notices are given, the mind, by the exercise of some inherent power, may be able to discover some remarkable qualities of such things, and even things of a very different nature, which are not to be discovered merely by any sense whatever." Still, with all these references to intuition, and moral sense, and inherent power, there was a deep mine, very much concealed till it was opened fully to the view by the penetration and perseverance of Reid.

In order to estimate the character of the age, it must also be taken into account, that there was a strong expectation, that results were to follow from the application of inductive science, to mental phenomena, similar to those which had flowed from its application to physics. Bacon had declared that his method was as applicable to mental, as to material facts, though he seems to have had no idea of consciousness being the agent to be employed in the inquiry into the laws of mind. Sir Isaac Newton had said, in his Optics, "and if natural philosophy, in all its parts, by pursuing this method, shall at length be perfected, the bounds of moral philosophy will also be enlarged." Pope, too, had said in his Essay on Man, "account for moral as for natural things." Turnbull, under whom Reid studied in Aberdeen, had quoted this language of Newton and Pope, in his work on the "Principles of Moral Philosophy," published in 1740; and his aim was to "apply himself to the study of the human mind, in the same way as to that of the human body, or to any other part of natural philosophy." Catching this spirit from Turnbull, Reid was even now employing it to discover principles deeper than any that had been systematically noticed by Locke, by Hutcheson, or any Scottish philosopher. To this same noble work Stewart now devoted himself; but, seeking meanwhile to combine with the profound philosophy of Reid, a literary excellence like that of Hume and Smith.

And this leads us to notice, that we cannot form anything like an adequate idea of the influences which combined to mould the character of Stewart, who cultivated literature as eagerly as he did philosophy, without taking into account, that he lived in an age of great literary revival in Scotland. The union between Scotland and England being now compacted, it was seen that the old Scottish dialect must gradually disappear, and ambitious youths were anxious to get rid of their northern idioms, and even grave seniors, including noblemen and dignified doctors, like Robertson (as we learn from Lord Campbell's Life of Loughborough), had formed a society, in order to be delivered from their Scottish pronunciation. A company of authors had sprung up, determined to assert their place among the classical writers of England ; and this had been already allowed to Hume, to Robertson, and Smith, and was being allowed to Beattie. Stewart had, no doubt, an ambition to take his place among the classical writers of Scotland.

While pursuing his studies at Glasgow, he read a paper on "Dreaming," before a literary society in connection with the University; and he subsequently read the same paper to a similar society in Edinburgh. The theory here started, was afterwards embodied in his "Elements," and contains, certainly, not the whole truth on this mysterious subject; but still *a* truth, namely, that in dreaming, the will is in abeyance, and the mind follows a spontaneous train. In the Edinburgh society he also read papers on "Taste," on "Cause and Effect," and "Scepticism." The fact that such topics were discussed, is a sign of the spirit which prevailed among the youth of Scotland at that time. It is worthy of being noticed, that at Glasgow, he boarded in the same house with Mr Alison, who afterwards, in his Essay on Taste, carried out the theory which had been started by Beattie, in his Dissertation on Imagination, as to the feeling of Beauty being produced by the association of ideas.

Quitting his course of training, we may now view him as delivering his professorial lectures, in the class-room in Edinburgh. By far the liveliest account of him is by Lord Cockburn. It is worthy of being read again by those who may have seen it before.

"He was about the middle size, weakly limbed, and with an appearance of feebleness which gave an air of delicacy to his gait and structure. His forehead was large and bald; his eyebrows bushy; his eyes grey and intelligent, and capable of conveying any emotion from indignation to pity, from serene sense to hearty humour, in which they were powerfully aided by his lips, which, though rather large perhaps, were flexible and expressive. The voice was singularly pleasing; and, as he managed it, a slight burr only made its tones softer. His ear both for music and for speech was exquisite; and he was the finest reader I have ever heard. His gesture was simple and elegant, though not free from a tinge of professional formality, and his whole manner that of an academical gentleman. . . . He lectured standing, from notes which, with their successive additions, must, I suppose, at last have been nearly as full as his spoken words. His lecturing manner was professorial, but gentlemanlike, calm and expository, but rising into greatness, or softening into tenderness, whenever his subject required it. A slight asthmatic tendency made him often clear his throat; and such was my admiration of the whole exhibition, that Macvey Napier told him not long ago that I had said there was eloquence in his very spitting. 'Then,' said he, 'I am glad there was at least one thing in which I had no competitor.' . . To me, his lectures were like the opening of the heavens. I felt that I had a soul. His noble views, unfolded in glorious sentences, elevated me into a higher world."

There were hearers who felt that there was a want in his expositions, and there are readers still who feel in the same way. Ardent youths, like Brown and Chalmers, looked on him as timid and over-cautious. Chalmers wrote in 1801:—

"I attend his lectures regularly. I must confess I have been rather disappointed. I never heard a single discussion of Stewart's which made up one masterly and comprehensive whole. His lectures seem to me to be made up of detached hints and incomplete outlines, and he almost uniformly avoids every subject which involves any difficult discussion."

Chalmers lived to proclaim him the highest of academic moralists. Still there was ground, in appearance and in reality, for the early criticism. In his writings he adopts the plan which Dr Robertson took credit for introducing, that of throwing a great deal of his matter into notes and illustrations. This method, carried to the extent to which it has been done by Robertson, Stewart, and M'Crie, is a radically defective one, as it interrupts the flow of the discourse, and, with this, the interest in and comprehension of the whole. He has a most sensitive aversion to all such bold speculations as Leibnitz indulged in, and is jealous of all such deductions as Descartes and Kant have drawn out. He has no ability for sharp analysis, and he looks on a high abstraction with as great terror as some men do on ghosts. He studiously avoids close discussion, and flinches from controversy; he seems afraid of fighting with an opponent, lest it should exhibit him in no seemly attitudes. Seldom does he venture on a bold assertion, and when he does, he always takes shelter immediately after behind an authority. Determined to sustain his dignity and keep up his flow of language, he often takes rounded sentences and paragraphs to bring out what a more direct mind would have expressed in a single clenching clause, or even by an expressive epithet. Often does the eager, ingenuous youth, in reading his pages, wish that he would but lay aside ceremony for a very little, and speak out frankly and heartily.

Still we should form a very unjust opinion of Stewart, if, in consequence of these weaknesses, we thought him devoid of originality, independence, or profundity. We certainly do not claim for him the sagacity of Locke, or the speculative genius of Leibnitz, or a power of generalising details equal to Adam Smith, or the shrewdness of Reid; or the logical grasp of Kant and Hamilton, and we admit that he was inferior to all these men in originality; but he has admirable qualities of his own,—in soundness of judgment he is more to be trusted than any of them; and if he is without some of their excellencies, he is also without some of their faults. He has no such rash and unmeasured diatribes as Locke's assault on innate ideas; no such extravagances as the monadical theory of Leibnitz; no such wasting of ingenuity as Smith's theory in his "Moral Sentiments;" he does not commit such gross misapprehensions in scholarship as Reid does; and he never allows any logic to conduct him to such preposterous conclusions as Kant and Hamilton landed themselves in, when they declared causation to be a law of thought and not of things. We have noticed that in many cases Stewart hides his originality, as carefully as others boast of theirs. Often have we found, after going the round of philosophers in seeking light on some abstruse subject, that on turning to Stewart, his doctrine is after all the most profound, as it is the most judicious.

We do not mean to enter into the details of his remaining life. In 1783 he married a Miss Bannatyne of Glasgow, who died in 1787, leaving an only child, afterwards Colonel Stewart. He spent the summers of 1788 and 1789 on the Continent. In the appendix to the Memoir, there is a selection from the letters which he wrote to his friends at home. Though written in the midst of instructive scenes, and on the eve of great events, they are excessively general and commonplace, and display no shrewdness of observation. In 1790 he married a daughter of Lord Cranston, a lady of high accomplishments, fascinating manners, and literary tastes. His house now became the resort of the best society of Edinburgh, and he himself the centre and bond of an accomplished circle, at a time when the metropolis of Scotland in the winter months was the residence of many of the principal Scottish families, and of persons of high literary and scientific eminence. The weekly re-unions in his house, which happily blended the aristocracies of rank and letters, bringing together the peer and the unfriended scholar, were for many years the source of an influence that most beneficially affected the society of the capital. His influence was extended by his receiving into his house, as boarders, young men chiefly of rank and fortune. In his classes of Moral Philosophy and of Political Economy, he had under him a greater body of young men who afterwards distinguished themselves, than any other teacher that we can think of. Among them we have to place Lord Brougham, Lord Palmerston, Lord John Russell, Francis Horner, Lord Lansdowne, Lord Jeffrey, Sir Walter Scott, Sydney Smith, Dr Brown, Dr Chalmers, James Mill, Sir A. Alison, and many others who have risen to great eminence in politics, in literature, or philosophy; and most of these have acknowledged the good which they derived from his lectures, while some of them have carried out in practical measures the principles which he inculcated. He seems, in particular, to have kindled a fine enthusiasm in the breast of Francis Horner, who ever speaks of him in terms of loftiest admiration, and, though cut off in early life, lived long enough to exhibit the high moral aims which he had imbibed from the lessons of Stewart.

It was in 1792 that the first volume of his Elements was published. In 1793 appeared his Outlines of Moral Philosophy, containing an epitome of the doctrines expanded in his larger writings. His other works appeared after successive intervals: his Account of Adam Smith in 1793, of Robertson in 1796, and of Reid in 1802; his Philosophical Essays in 1810; the second volume of his Elements in 1814; the first part of his Dissertation in 1815, and the second in 1821; the third volume of his Elements in 1827; and the Active and Moral Powers in 1828. The Lectures on Political Economy are now published for the first time.

In 1805 he threw himself, with more eagerness than he was wont to display in public matters, into the controversy which arose about the appointment of Leslie—a man of high scientific eminence, but with a great deal of the gross animal in his nature—to the chair of Mathematics. He wrote a pamphlet on the subject, and appeared in the General Assembly of the Church of Scotland, as a Presbyterian elder, to aid the evangelical party, who, under the leadership of Sir H. Moncrieff, were no way inclined to join the moderate party in their attempt to keep out a distinguished man, because he entertained certain views on the subject of physical causation, and to retain the College chairs for themselves. In his speech on the occasion, Stewart does let out feeling for once, and it is mingled pride and scorn :—

> "After having discharged for more than thirty years (not, I trust, without discredit to myself) the important duties of my academical station, I flatter myself that the House does not think it incumbent on me to descend to philosophical controversies with such antagonists. Such of the members, at least, as I have the honour to be known to, will not, I am confident, easily allow themselves to be persuaded that I would have committed myself rashly and wantonly on a question in which the highest interests of mankind are involved."

In delivering the speech from which the above is an extract, he was called to order, and, not being accustomed to such handling, he sat down abruptly. The motion of Sir H. Moncrieff was carried by a majority, which occasioned great joy to the Edinburgh Liberals.

In 1806, the Whig party, being in power, procured for him a sinecure office, entitled the Writership of the Edinburgh Gazette, with a salary of L.300 a-year. In 1809, Mr Stewart was in a precarious state of health, much aggravated by the death of a son by his second wife, and he asked Dr Thomas Brown to lecture for him. In 1810, Brown, being strongly recommended to the Town Council by Stewart, was appointed conjoint professor, and henceforth discharged all the duties of the office. Brown never attacked Stewart, but he openly assailed Reid; and we suppose the intimacy between Stewart and Brown henceforth could not have been great. Stewart delivered his ultimate estimate of Brown in a note appended to the third volume of the Elements. There is evidently keen feeling underlying it, but the criticism is, on the whole, a fair and just one. Stewart now lived, till the close of his life, at Kinniel House, Linlithgowshire —a residence placed at his service by the Duke of Hamilton. Henceforth he was chiefly employed in maturing and arranging the philosophical works which he published. The details given of this part of his life are scanty and uninstructive. In 1820 he came forth to support Sir James Mackintosh as successor to Brown; and when Sir James declined the office, Stewart recommended Sir W. Hamilton, who seems ever afterwards to have cherished a feeling of gratitude towards Stewart. The election fell on Professor Wilson, who, while the fittest man living for the chair of Rhetoric and Belles Letters, had no special qualifications for a chair of Philosophy.

In 1822, Mr Stewart had a stroke of paralysis, from which, however, he partially recovered. Mrs Stewart describes him, in 1824, as troubled with a difficulty of speech, and a tremor in his hand, as walking two or three hours every day, as cheerful in his spirits, his mind as acute as ever, and as amusing himself with reading on his favourite pursuits, and with the classics. He had just given to the world his work on the Active Powers, and was on a visit to a friend in Edinburgh, when he died on 11th June 1828. He was buried in the family vault in the Canongate. There is a monument in honour of him on the Calton Hill; but the fittest memorial of him is to be found, first, in his pupils, who have done a good work in their day, and now in his writings, which may do a good work for ages to come.

If there has been an anxiety felt to have a memoir of Stewart, there has been an equally strong desire to have a complete edition of his works. We do not know what causes may have hindered this in time past—we suspect that they must have arisen from different parties having an interest in his published writings; but this we know, that it was difficult to procure certain of his works, as, for example, the third volume of his Elements, of which there had never been more than the one quarto edition. Every one rejoiced, in these circumstances, to find it intimated, that we were to have the collected works of Stewart, edited by Sir W. Hamilton, the most competent man then living for the undertaking. This edition is now all but completed, and will ever be the standard one. The editor has not enriched it with such notes as he has appended to his edition of Reid—notes distinguished for the very qualities which Reid was deficient in, extensive scholarship and rigid analysis. Sir W. Hamilton, in undertaking the work, stipulated that Mr Stewart's writings should be published without note or comment. We rather think that Hamilton had not such a sympathy with the elegant and cautious disciple as with the shrewd and original master. Besides, elaborate notes to Stewart must have been very much a repetition of his notes to Reid. In this edition Hamilton is tempted at times to depart from his rule; he does give us a note or comment when the subject is a favourite one, such as the freedom of the will; and often must he have laid a restraint on himself, in not pruning or amending to a greater extent. But the value of this edition consists in its being complete, in its having references supplied, and one index after another, and in its containing additions from Stewart's manuscripts, and these often of great value, both in themselves and as illustrating Stewart's philosophy. Sir W. Hamilton was cut off before the edition was completed, but Mr Veitch has carried on the work in the same manner and spirit. Having said so much of this fine edition, we must protest against the occasional translation of the language and views of Stewart into those of Hamilton, in places where it is purported to give us Stewart himself. Thus, in Index, vol. iv., p. 408, Stewart is represented as, in a place referred to, discussing the question as to whether some of our notions be not "native or *a priori*," but, on looking up the page, no such language is used; and the same remark holds good of vol. v., p. 474, where Stewart is spoken of as describing our notions both of matter and mind as merely "phænomenal," a view thoroughly Kantian and Hamiltonian, and not sanctioned by Stewart. We must be allowed, also, to disapprove of the liberty taken with the Outlines of Moral Philosophy, which is cut up into three parts, and appears in three distinct volumes. This is the most condensed and direct of all Stewart's writings; it contains an abridgment of his whole doctrines: it is one of the best text-books ever written, and it should have appeared in its unity, as Stewart left it.

We do not propose to criticise these ten massive volumes. This would be a heavy work to ourselves and to our readers: it would almost be equivalent to a criticism of all modern philosophy. Nevertheless, we must touch on some topics of an interesting and important kind, as discussed by Stewart, and again discussed by later writers on mental science.

The first volume of the collected works contains the Dissertation. We look upon it as the finest of the Dissertations in the Encyclopædia Britannica; and this is no mean praise, when we consider the number of eminent men who have written for that work. We regard it, indeed, as upon the whole the best dissertation which ever appeared in a philosophic serial. As a history of modern philosophy, especially of British philosophy, it has not been superseded, and, we believe, never will be set aside. It is pre-eminent for its fine literary taste, its high moral tone, its general accuracy, its comprehensiveness of survey, and its ripeness of wisdom. When we read it, we feel as if we were breathing a pure and healthy atmosphere, and that the whole spirit of the work is cheering, as being so full of hope in the progress of knowledge. Its critical strictures are ever candid, generally mild, very often just, and always worthy of being noted and pondered. The work is particularly pleasing in the account given of those who have contributed by their literary works to diffuse a taste for metaphysical studies, such as Montaigne, Bayle, Fontenelle, and Addison. It should be admitted that the author has scarcely done justice to Grotius, and failed to fathom the depth of such minds as Leibnitz and Jonathan Edwards. We agree, moreover, with those who regret that he should ever have been tempted to enter on a criticism of Kant, whose works he knew only from translations and imperfect compends.[1]

The next three volumes contain the Elements of the Philosophy of the Human Mind, and are introduced by a portion of the Outlines. In the first volume of the Elements and in the opening of the second, he spreads out before us a classification of the intellectual powers,—as Perception, Attention, Conception, Abstraction, Association of Ideas, Memory, Imagination, and Reason. The list is at once defective and redundant. Stewart acknowledges Self-consciousness, which is an inseparable concomitant of all the present operations of the mind, to be a separate attribute; and in this he seems to be right, inasmuch as it looks at a special object, namely, self in the existing state, and gives us a distinct class of ideas, namely, the qualities of self, such as thinking and feeling. Yet it is curious, that while he gives it half a page in his Outlines, it has no separate place in the Elements. It is also a singular circumstance that Reid dismisses it in the same summary way. An inductive observation, with an analysis of the precise knowledge given us by self-consciousness, would give a solid foundation for the doctrine of human personality, and clear away the greater part of the confusion and error lingering in the metaphysics of our day. Nor is there any proper account given in the Elements of that important group of faculties which discover relations among the objects known by Sense-Perception, and Consciousness. The omission of this class of attributes has led him into a meagre nominalism, very unlike the general spirit of his philosophy. He restricts the word Conception to the mere imaging power of the mind, and even to the picturing of bodily objects, as if we could not represent mental objects as well, as, for example, ourselves or others in joy or sorrow. In a later age, Hamilton has confined the term in an opposite direction to the logical or general notion. Stewart's classification is also redundant. Attention is not a separate faculty, but is an exercise of will—roused, it may be, by feeling, and fixing the mind on a present object. He does not seem to know what to make of Reason, as a distinct faculty; and, as defined by him, it ought to include abstraction, which is certainly a rational exercise. But, if the work is defective in logical grasp, it excels in its descriptions of concrete operations, and in its explanations and elucidations of phenomena presenting themselves in real life. All his works are replete with those "intermediate axioms" which Bacon commends as most useful of all, as being removed equally from the lowest axioms, which differ but little from particulars, and from the highest and most general, which are notional, abstract, and of no weight; whereas the "intermediate are true, solid, full of life, and upon them depend the business and fortune of mankind." The fine reflection and lofty eloquence of Stewart come out most pleasingly and instructively in all those passages in which he treats of association and imagination.

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[1] In regard to histories of philosophy, we have now three Parts of Mr Maurice's work, in all of which we have huge sunlit objects, seen, as it were, in a fog, raised by the heat of a dreamy, feverish, sultry day in summer. The great defect of all his works is, that he seldom utters a clear categorical proposition. Mr Lewes has published a library edition of his Biographical History of Philosophy. The work is clever and acute, but is not profound, and is thoroughly sophistic. He has no sympathies with humble, cautious, and practical truth seekers, such as Socrates and Thomas Reid. His appreciation is of the Arabs of philosophy, such as the Sophists and David Hume, and of thought-bewildered men, such as Spinoza, of whose Ethics he threatens to give us a translation; and his end is to show us that philosophy can yield no truth, and thus to shut us up to a miserable Comtism, in which is omitted the religion (if religion it can be called), which the late M. Comte declared to be the most essential part of his system. In his *Politique Positive*, M. Comte speaks of those in this country who have adopted the other parts of his system, and rejected his religious worship, as guilty either of an impotency of intellect, or an insufficiency of heart, or, most commonly, of both.

On one important point, discussed frequently in the Elements, the school of Reid and Stewart was led into error by their excessive caution, and by being awed so much by the authority of Locke. Reid maintained, in a loose way, that we do not know substance but qualities, and Stewart wrought this view into a system. We are not, he says, properly speaking, conscious of self or the existence of self, we are merely conscious of a sensation or some other quality, which by *a subsequent suggestion of the understanding*, leads to a belief in that which exercises the quality.—(*Phil. Essays*, p. 58, etc.) This we must regard as a radically defective doctrine. We do not know intuitively a quality of self apart from self; we know both in one primitive, concrete act, and it is only by a subsequent operation that we separate in thought the quality which may change in its action from the self or substance which abideth. Descartes erred, we think, when he represented the mental process as being "*cogito ergo sum;*" the primitive cognition is of the *ego cogitans*. But we look on Stewart as equally erring when he says, that there is first a sensation and then a belief in self. In a later age, Sir W. Hamilton connected the *qualitative* theory of Stewart with the *phenomenal* theory of Kant. In doing so he was guilty, we must take the liberty of saying, of a great and inexcusable blunder. Stewart would have repudiated the phenomenal theory of Kant as at all identical with his own. Stewart, no doubt, speaks of the phenomena of the mind, but he means by phenomena not, as Kant did, *appearances*, but individual *facts* to be referred to a law; and qualities with him were *realities*. But, legitimately or illegitimately, Hamilton identifying the qualitative theory with the phenomenal, deduces from them a system of relativity, which ended in nihilism, or at least in nescience. We are glad to notice that Mr Mansel, notwithstanding his great and just admiration of Hamilton, has emancipated himself from this fundamental error. He proclaims, "I am immediately conscious of myself, seeing and hearing, willing and thinking."—(*Proleg. Logica*, p. 129; also, Art. Metaph. in *Encyc. Brit.*) We have sometimes thought, that if Stewart had foreseen all the logical consequences to be deduced from his views, he would have fallen back on the same common sense doctrine. We regret that Mr Mansel has not gone a step farther, and placed our cognition of matter on the same footing in this respect as our knowledge of mind. We are sure, at least, that this would be altogether in the spirit of Reid and Stewart. We maintain that, just as by self-consciousness we know self as exercising such and such a quality, say thinking or feeling, so, by sense-perception, we know a body as extended and exercising power or energy. This is the simplest doctrine; it seems to be the only one consistent with consciousness, and is the proper doctrine of natural realism as distinguished from an artificial system of relativity.

In the second volume of the Elements, after a feeble and chiefly verbal disquisition on Reason, he proceeds to treat of the "Fundamental Laws of Belief." We reckon the phrase a very happy one, and a great improvement on "Common Sense," which labours under the disadvantage of being ambiguous, inasmuch as it usually denotes that unbought, untaught sagacity, which is found only in certain men, and which others can never acquire, whereas it can be admitted into philosophical discussion only when it denotes principles which are regulating the mind of all. We have a remark to make as to the place in which he discusses these fundamental laws. It is after he has gone over the greater number of the faculties, and he seems to treat them as involved in Reason. And we acknowledge that there may be some advantages in first going over the faculties and then speaking of these fundamental laws. But we must guard against the idea that these principles have not been involved in the faculties which he has previously gone over, such as Perception, Abstraction, and Memory. The "Fundamental Laws" are not to be regarded as different from the Faculties; they are, in fact, the Necessary Laws of the Faculties, and guiding their exercise. These laws work in all minds, infant and mature, sane and insane. M. Morel was asked to examine a prisoner who seemed to be deranged, and he asked him how old he was; to which the prisoner replied, "245 francs, 35 centimes, 124 carriages," etc. To the same question, more distinctly asked, he replied, "5 metres 75 centimetres." When asked how long he had been deranged, he answered, "Cats, always cats." M. Morel at once declared his madness to be similated, and states, "In their extreme aberrations, in their most furious delirium, madmen do not confound what it is impossible for the most extravagant logic to confound. There is no madman who loses the idea of cause, of substance, of existence."—(See *Psychol. Journal*, Oct. 1857.)

Stewart's doctrine of Causation seems to us to be deficient and inadequate. He is altogether right in calling it a Fundamental Law of Belief, which necessitates the mind to rise from an effect to a cause. But he does not seem to observe all that is involved in the cause. He gives in too far to Hume on this subject, and prepared the way for Brown's theory. He does not see, in particular, that causation springs from power being in the substance or substances which act as the cause, and that we intuitively discover power to be in substances both mental and material. His distinction between efficient and physical cause is of a superficial and confused character. It may be all true that, in looking at physical action, we may not know intuitively where the full efficiency resides, whether in the physical object alone or in mind (the Divine) acting in it; but we are certain that there is an efficiency somewhere in some substance. We are by no means sure that he is right in limiting power in the sense of efficiency to mental action. We agree here with the criticisms of Cousin (as indeed we agree with most of the criticisms of Cousin on the Scottish School) where he says, that while our first idea of cause may be derived from our own voluntary action, we are at the same time intuitively led to ascribe potency to other objects also, and that Reid and Stewart, in denying that we discover efficiency in body, are acting contrary to their own principles of common sense, and in contradiction to the universal opinion of the human race, which is, that fire burns and light shines.—(See Cousin, *Phil. Ecoss.*, p. 437, ed. 1857.) Stewart has also failed, as it appears to us, to give the proper account of the intuition which regulates and underlies our investigations of nature. This is not, as he represents it, a belief in the uniformity of nature; a belief which appears to us to be the result of experience; which experience, as it discovers the rule, may also announce the exceptions. The child does not believe, nor does the savage believe, nature to be uniform. The underlying beliefs, which carry us on in our investigations of nature are those of identity of being, of substance and quality, of cause and effect. Hence it is quite possible to prove a miracle which may not be in conformity with the uniformity of nature, but is quite compatible, as Brown has shown, with our intuitive belief in causation, for when creature power fails we can believe in creative.

It is in the second volume of the Elements that we find the logical disquisitions of Stewart. He has utterly failed in his strictures on Aristotle's Logic. The School of Locke, and the School of Condillac, and the School of Reid, have all failed in constructing a logic of inference which can stand a sifting examination. The Aristotelian analysis of reasoning stands at this moment untouched in its radical positions. The objections of Campbell and Stewart have been answered by Whately; and those advanced by Mr J. S. Mill, have been answered by Mr Kidd, who has also thoroughly undermined Mr Mill's own attributive theory of reasoning.[1] In giving our adherence to the Aristotelian analysis, we admit that improvements are being wrought in it by that school of logicians which has sprung from Kant, and of which Hamilton is the leader in this country, followed by such eminent men as Mansel, Thomson, and Spalding. But their improvements ought not to be admitted till the formal logicians thoroughly deliver their expositions of the laws of thought from all that false Kantian metaphysics, which represents thought as giving to the objects a "form" which is not in the objects themselves. Besides, we cannot allow Logic to be an *a priori* science except under an explanation; we admit that the laws of thought operate in the mind prior to all experience, but we maintain that they can be discovered by us only *a posteriori*, and by a generalisation of their individual actings.

But while we may thus expect a perfected Universal Logic, treating of the laws of thought as laws of thought—not independent of objects but whatever be the objects—we hope there will grow up alongside a Particular Logic, which will be a more practically useful Logic, to consider the laws of thought as directed to particular classes of objects, and to treat of such topics as Demonstrative and Probable Evidence, Induction, and Analogy. In regard to this latter Logic, Stewart must ever be referred to as an authority. So far, indeed, as the theory of definitions and axioms is concerned, we prefer very much the view of Whewell, as developed in his Philosophy of the Inductive Sciences. But, in regard to Induction, we believe that Stewart's account of it is, upon the whole, the best which appeared from the time of Bacon down to this our own age. We have now, however, two great works, which have left every other far behind, that of Whewell and that of Mr J. S. Mill. Not that we regard either of these as perfect. Dr Whewell has exaggerated the place of the mental element, and has expressed it in most unfortunate phraseology, such as Fundamental Ideas and Conceptions, terms which have been used in twenty different significations, and are used by him to denote that the mind superinduces on the facts something not in the facts, whereas the mental power merely enables it to discover what is in the facts. Mr Mill, on the other hand, has overlooked the mental element altogether, and denies all necessary and universal truth. We may hope, in future years, to have a perfect Inductive Logic, by a judicious combination of these two works, but this could be done only by a man of the same high intellectual stature as Whewell and Mill, and this will seldom be met with. It is to be regretted that, since the days of Stewart, there is not a single Scotchman who has presented a work on Induction, of any name or value.[1] In regard to Analogy, the recent discoveries as to the typical forms of animals and plants will enable logicians to give a far more comprehensive and yet more stringent view of reasoning from analogy than has been done by Stewart, by Whewell, or by Mill.

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[1] Dr Whately, as far as can be judged from the editions of his Work, seems entirely ignorant of all that has been done in Logic the last quarter of a century, but he has met with an acute defender in Mr Kidd.—See his *Primary Principles of Reasoning.*

The third volume of the Elements treats of certain concrete and practical matters, which Stewart was peculiarly qualified to discuss, and which bring out some of the finer qualities of his mind. All his disquisitions had tended to become verbal, and here he treats expressly of language, which he does with fine discernment, but falls into a great blunder in regard to Sanscrit, which he represents as of comparatively late origin, and analogous to mediæval Latin, whereas it has a literature reaching back at least twelve hundred years before Christ. He has some interesting, though by no means profound, remarks on the sympathetic affections. But by far the finest parts of the volume are those in which he treats of the varieties of intellectual character, and of the peculiarities of the metaphysician, mathematician, the poet and the sexes. Thus, of the mere metaphysician, he says, that

"He cannot easily submit to the task of examining details, or of ascertaining facts, and is apt to seize on a few *data* as first principles, following them out boldly to their remotest consequences, and afterwards employing his ingenuity to reconcile, by means of false refinements, his theoretical assumptions with the exceptions which seem to contradict them."

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[1] It is a good sign of the times, however, that we have excellent works on Bacon from England, France, and even Germany. The edition of the Works of Bacon by Ellis and Spedding, now in course of publication, will ever be the standard one, in consequence of the pains bestowed on it. The public seem to expect from Mr Spedding a Life of Bacon of an impartial character, and justifying him from some of the sweeping charges of Pope and Macaulay. It is an interesting circumstance that, perhaps, the fairest estimate which we have of Bacon and the Inductive System, is by a German, Kuno Fischer, in his "Francis Bacon of Verulum" (translated by Oxenford). He errs, however, after the usual German mode of theorising, in connecting Bacon with such men as Hobbes and Hume, the former of whom never professed to follow the Baconian method, and the latter of whom formed a very low estimate of Bacon, and has been most effectively met by Reid and Stewart, who professedly and really adopted the inductive system. This has been shown by Remusat, in his pleasantly written and judicious work, "Bacon Sa Vie, Son Temps, Sa Philosophie." It does not appear that Remusat has a thorough appreciation of the Inductive Method, in itself or in its results, but he has estimated justly Bacon's general philosophy, and has some good remarks on the metaphysical points involved in Induction.

He shows that the metaphysician is safe from the checks met with in physics, "where speculative mistakes are contradicted by facts which strike our senses." Again, of mathematics, he says: —

"That while they increase the faculty of reasoning or deduction, they give no employment to the other powers of the understanding concerned in the investigation of truth."

He adds—

"I have never met a mere mathematician who was not credulous to excess."

In the same volume he discusses cautiously and judiciously the comparison between the faculties of man and brutes. We suspect, however, that the theory has not yet been devised, it has certainly not been published, which is fitted to give a satisfactory account of the relation of the brute to the human faculties. We suppose that Bonnet is right when he says that we shall never be able to understand the nature of brute instinct, till we are in the dog's head without being the dog. It is certain that we have at this moment nothing deserving of the name of science on this subject. We have sometimes thought that the modern doctrine of homologues and analogues, if extended and modified to suit the new object, might supply the key to enable us to express some of the facts. Certain of the brute qualities are merely analogous to those of man (as the wing of a butterfly is analogous to that of a bird); others are homologues, but inferior in degree; while there are qualities in man different in kind from any in the brute. Aristotle called brute instincts, *μιμηματα της ἀνθρωπινης ζωης.* They would be more accurately described as anticipations or types of the coming archetype. The volume closes with an account of a boy born blind and dumb.

The Philosophical Essays are an episode in his system as a whole, even as his numerous notes and illustrations are episodes in the individual volumes. We are tempted, in looking at them, to take up two of the subjects discussed, as a deep interest still collects around them, and the questions agitated cannot yet be regarded as settled.

Every careful reader of Locke's Essay must have observed two elements running through all his philosophy—the one, a sensational, or rather to do justice to Locke, who ever refers to reflection as a separate source of ideas, an experiential element, and the other a rational. In the opening of the Essay he denies innate ideas apparently in every sense, and affirms that the materials of all our ideas are derived from sensation and reflection; but, as he advances, his language is, that by these sources ideas are "suggested and furnished to the mind;"[1] he calls in faculties with high functions to work on the materials; speaks of ideas which are "creatures and inventions of the understanding;" appeals to "natural law" and the "principles of common reason;" and in the Fourth Book gives a very high, or rather deep place to intuition; says that we have an intuitive knowledge of our own existence; speaks of the "mind perceiving truth as the eye doth light, only by being directed toward it;" declares that in the "discovery of and assent to these truths, there is no use of the discursive faculty, no need of reasoning, but they are known by a superior and higher degree of evidence," and talks even of a "necessary connection of ideas." It unfortunately happened that in France, to which Locke was introduced by Voltaire and the Encyclopædists, they took the sensational element alone, and the effect on thought and on morality was most disastrous. Unfortunately, too, Locke has become known in Germany, chiefly through France, and hence we find him all over the Continent, described both by friends and foes as a sensationalist; and the charge has been re-echoed in this country by Sir W. Hamilton and Mr Morell. Yet it is quite certain that Locke has an intellectual as well as a sensational side. We have, in a careful perusal of the Essay, mainly for this very end, discovered in every book, and in the majority even of the chapters, both sides of the shield; but we confess that we have not been able to discover the line that joins them.[2] We do not think that Stewart's remarks on this subject are exhaustive or decisive; he is evidently wrong in supposing that Locke identified reflection with the reason which discovers truth; but his strictures are always candid and sometimes just.

In the Philosophical Essays Stewart has many fine observations on Taste and Beauty. On this subject he was favourably disposed towards the theory of his friend Mr Alison, and he ascribes more than he should have done to the association of ideas. But he never gave his adhesion to this hypothesis as a full explanation of the phenomena. "If there was nothing," he says, "originally and intrinsically pleasing or beautiful, the associating principle would have no materials on which it could operate." The theory of association was never favourably received by artists, and has been abandoned long ago by all metaphysicians. The tendency now is to return to the deeper views which had been expounded long ago by Plato, and we may add, by Augustine. We find that Stewart refers to the doctrine of Augustine, who "represents beauty as consisting in that relation of the parts of a whole to each other which constitutes its unity;" and all that he has to say of it is, "The theory certainly is not of great value, but the attempt is curious." The æsthetical writers of our age would be inclined to say of it that there is more truth in it than in all the speculations of Alison, Stewart, Jeffrey, and Brown. It may be safely said that, while earnest inquirers have had pleasant glimpses of beauty, to no one has she revealed her full charms. When such writers as Cousin, Ruskin, and M'Vicar dwell so much on Unity, Harmony, Proportion, we are tempted to ask them—does then the feeling of beauty not arise till we have discovered such qualities as Proportion, Unity, and Harmony? and if they answer in the affirmative, then we venture to show them that they are themselves holding a sort of association theory; for they affirm that, the beautiful object does not excite emotion till, as a sign, it calls forth certain ideas—we suspect of truth or goodness. We are not quite sure that we can go the length of this school, when they speak of beauty as a quality necessary, immutable, eternal, like truth and moral good, and connect it so essentially with the very nature of God. There are sounds and colours and proportions felt to be beautiful by us, but which may not be appreciated by other intelligences, and which are so relished by us, simply because of the peculiarities of our human organisation and constitution. We acknowledge that, when we follow these colours, and sounds, and proportions, sufficiently far, we come invariably to mathematical ratios and relations; but we are now, be it observed, in the region of immutable truth. Other kinds of beauty, arising from the contemplation of happiness and feeling, land us in the moral good, which is also necessary and eternal. We have sometimes thought that beauty is a gorgeous robe spread over certain portions of the true and the good, to recommend them to our regards and cluster our affections round them. Our æsthetic emotions being thus roused, the association of ideas comes in merely as a secondary agent, to prolong and intensify the feeling.[1]

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[1] This is the very language adopted by Reid and Stewart.

[2] The rational side of Locke has been brought out in a work of ability lately published, "The Intellectualism of Locke," by T. E. Webb, now, we believe, Professor of Moral Philsophy in Dublin University. Most appropriately does such a work come from a college, which, ever since the days of Molyneux, the correspondent of Locke, has held the Essay on the Human Understanding in the highest repute. We are not convinced that Mr Webb has succeeded in proving the consistency of Locke.

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[1] We have had of late two excellent works on Beauty by Scotchmen. Professor Blackie's "Lectures on Beauty" are written quite in his own dashing and spirited manner, and comprise a vast amount of solid truth. A periodical which

The two volumes on the Philosophy of the Active and Moral Powers, were published by Stewart immediately before his death. The leading ideas unfolded in them had been given, in an epitomised form, in the Outlines published many years before. They are somewhat too bulky for all the matter they contain, and they want somewhat of the freshness of his earlier works; but they are characterised by profound wisdom, by a high moral tone, by a stately eloquence, and the felicitous application of general principles to the elucidation of practical points. He begins with the Instinctive Principles of Action, which he classifies as Appetites, Desires, and Affections. The arrangement is good, in some respects, but is by no means exhaustive. As the next step in advance in this department of mental science, an attempt must be made to give a classification of man's motive principles, or of the ends by which man may be swayed in desire and action. Among these will fall to be placed, first of all, pleasure and pain; that is, man has a natural disposition to take to pleasure and avoid pain. But this is far from being the sole motive principle in man's mind. There are many others. There is, for example, the tendency of every native faculty to act, and this irrespective of pleasure or pain. Again, there are particular natural appetencies, which look to ends of their own, towards (to use the language of Butler) particular external things of which the mind hath always a particular idea or perception towards these things themselves, such as knowledge, power, fame, and this independent of the pleasure to be derived from them. Higher than all, and claiming to be higher, is the moral motive, or obligation to do right. A classification of these motive principles, even though only approximately correct, would serve most important purposes in philosophy generally, and more especially in ethics and all the social sciences. Very low and

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represents young Oxford and Cambridge, congratulates him on his hits at the national faith of Scotland; and yet we know not that he has anything better to substitute, and we are sure he would repudiate that mixture of high-churchism and low doctrinism which his critics are seeking to recommend. His translations from Plato appended are thorough reproductions of the original. Mr Blackie would confer a mighty boon on Scotland, and help to soften the hardness of the Scottish character, if he could create in Edinburgh University a taste for Plato as strong as the taste for Aristotle in Oxford. The other work is on "The Beautiful in Nature, Art, and Life. By A. J. Symington," an adherent, we believe, of one of Scotland's most uncompromising religious sects. It is the production of one who has travelled wide intellectually, and gathered his knowledge from afar. He does not profess to sound all the theoretical depths of the subject; but, on a rich ground-work of his own he has set gems selected from all sorts of authors sacred and profane, and has given us noble thoughts on architecture, sculpture, painting, poetry, music, and life. When Sir W. Scott represented the Covenanters as opposed to all sorts of manly sports, Dr M‘Crie showed that their ministers often joined in such games, and at times stood first. If any one will maintain that Scotland's stern sects are opposed to the fine arts, we bid him read Symington's work on the Beautiful.

inadequate views have been taken of these motive principles of humanity, especially by those who represent man as capable of being swayed only by the prospect of securing pleasure or avoiding pain. Mr Veitch seems to expect great results to be derived from recognising the "place and importance, in ethical speculation, of the Aristotelic doctrine of the pleasurable—a grand and fertile, but little illustrated principle." We have an expectation that some curious questions will be started by the revival of the old Platonic and Aristotelic disquisitions on this subject, in the forthcoming volumes of Sir W. Hamilton. But it should never be forgotten, that the emotive part of man's nature may be excited by a great many other objects as well as pleasure and pain, by all the objects, indeed, which are addressed to the motive principles of man. It is the apprehension of objects as about to gratify the motive principles of the mind—whatever they be—which stirs up the emotions. Thus, the apprehension of a coming object, which is to gratify a motive principle, excites hope, which is strong in proportion to the strength of the apprehension, and the strength of the particular motive principle; while the apprehension of a coming object, which is to disappoint this motive principle, stirs up fear. It is strange that Stewart nowhere treats of the emotions in his Philosophy of the Active Powers.

Stewart's View of the Moral Power in Man, and of Moral Good, seems to us to be substantially correct. In treating of these subjects, he avows his obligations to Butler and Price.[1]

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[1] Aristotle holds his place at Oxford. We rejoice at this, provided he is not allowed to slay all his younger brethren that he may be undisturbed in his reign; that is, provided his writings are not studied, to the neglect of modern authors who have proceeded in the inductive manner. The volume on the "Ethics of Aristotle," lately published by Sir Alexander Grant of Oxford, is the best work in the English language on the ethical system of Aristotle, even as the first half of the second volume of Archer Butler's History is the best work on the Dialectics of Plato. We do not agree with Sir Alexander in his view of the death of Socrates, but we are grateful to him for his account of the Sophists, as against Grote. His account of the relation in which the philosophy of Aristotle stood to the previous Grecian systems, is searching, and generally accurate; though he does not, we think, give full credit to Aristotle for correcting the extravagances of Plato, who did not acknowledge the reality of the individual. Sir Alexander seems to us to have unconsciously fallen at times under the influence of a Hegelianism, which juggles with the phrases objective and subjective; which forgets that the mind *intuitively knows the individual*, and thence rises to the general; which blames Socrates for not discovering the contradictions on which Hegel dwells, and confounds the Greek search after the "Real" (τὸ ὄν) with the modern German search after the "Absolute." The most masterly parts of Sir Alexander's works, are those in which he shows Aristotle's precise doctrines, as distinguished from the doctrines of his predecessors and successors, and in which he explains the "Dunamis," the "Entelecheia," the "Energeia," the "Hexis," the "Ergon," the "Telos," the "Mesotes." After reading it, we feel as if we understood Aristotle better than ever we did before. We agree with him in what he says as to the difference between the Aristotelian systems and the modern inductive systems of Butler and Stewart; but we

His doctrine has been adopted, with some modifications, which are improvements, by Cousin. Stewart and Cousin are the most elevated of all the moralists who treat of ethics on grounds independent of the Word of God. We are convinced that they never could have given so pure a morality, had they not lived in the midst of light shed abroad on our earth by a supernatural religion. We have always felt it to be a strange circumstance, that Stewart and Cousin, in giving so high a view of the moral faculty, are never led to acknowledge that it condemns the possessor; and, after presenting moral good in so rigid a form, are not constrained to acknowledge that the moral law has not been kept by man. Taking their own high principles along with them, neither could have looked within, without discovering sin to be quite as much a reality as virtue. Stewart could not have gone out of his dwelling in the old College or the Canongate, nor can Cousin go out of his chambers in the Sorbonne, without being obliged to observe how far man and woman have fallen beneath the ideal picture which they have drawn in their lectures. At the very time when the Scottish metaphysicians were discoursing so beautifully of moral virtue, there was a population springing up around their very colleges in Edinburgh and Glasgow, sunk in vice and degradation, which appalled the good men of the next age—the age of Chalmers—to contemplate, which the men of this age know not how to grapple with, and which is not to be arrested by any remedy which the mere philosophic moralists have propounded. We acknowledge most fully, that Stewart's lectures and writings have tended, directly or indirectly, to carry several important measures which are calculated to elevate the condition of mankind, such as Reform in the Legislature, Prison Improvement, and the Abolition of Tests and of Restrictions on Commerce. But the institutions which aim at lessening the sin and misery of the outcast and degraded—such as missions, ragged schools, and reformatories—have proceeded from very different influences; and a philosophy embracing the facts which they contemplate, must dive deeper into human nature, and

object to any statement which may leave the impression, that there can be a more philosophic method than that which begins with Induction, and thence, after the discovery of the law, goes on to Deduction. It is only by inductive mechanical investigation, that we can determine what truth there may be in the distinction between the "Dunamis," the "Entelechy," the "Energy," and the "Ergon." That there must be truth in these deductions, is evident from the circumstance, that the latest mechanical philosophy, in the hands of such men as Professor W. Thomson and Mr Ranken, is obliged to draw the distinction between "Capacity," "Potential Energy," "Actual Energy," and "Work." It is only by an inductive mental science, that we can determine what truth there is in these distinctions in regard to mind (and there is truth in them), and what in the "End," the "Habit," and "Moral Syllogism." As to the "Moral Syllogism," it proceeds on the fundamental moral law, which, as a major, underlies all our moral reasonings.

probe its actual condition more faithfully, than the academic moralists of Scotland ever ventured to do. Mr Veitch very properly remarks, in a foot-note: "The great fact of man's actual condition, as the member of a lapsed world—the peculiar ethical motives of reverence and love for a Person who has exemplified the moral law in absolute perfection, and done so in the creature's behoof—and all the questions connected with the adjustment of the results of the ordinary Christian ethics—are unnoticed by Mr Stewart, or, in general, by Scottish ethical speculators of note." As Mr Veitch has found space, from time to time, to refer, in his Memoir, to writers of his own Hamiltonian school, he might also have spared a sentence to state, that this defect was supplied by Chalmers, who is reckoned, wherever the English language is spoken, an ethical writer of note. It is an interesting and encouraging circumstance, that the majority of the professors of Morals in the Scottish colleges at this present time, have avowed in their writings a belief in the doctrines of sin and atonement, and, we presume, teach them in their classes. We hope that it will never be tolerated again in Scotland, that any professor of moral science should inculcate, that man is subject to moral law, without adding that he has disobeyed it.

It is very evident that the Scottish academic moral writers of last century, while they pay a dignified respect to Christianity, have kept at a distance from its profound peculiarities. Without meaning to excuse this deficiency, we may yet affirm that some incidental advantages have sprung from this *reticence.* It was certainly better that they should have kept at a respectful distance from Christianity, than that they should have approached it only, like the great German metaphysical systems, to set all its truths in rigid philosophic framework, or to absorb them all within themselves, as by a devouring flame. But the peculiar advantage arising from their method, consists in this, that they have, by induction, established a body of ethical truth on grounds independent of revealed religion; and this can now be appealed to in all defences of Christianity, and as an evidence of the need of something which philosophy is incompetent to supply. Divines can now found on those great truths which the Scottish philosophers have established, as to their being a distinct moral faculty and an immutable moral law, and then press on those whose conscience tells them that they have broken that law, to embrace the provision which revelation has made to meet the wants of humanity.

The space which we have occupied with the Mental and Moral Philosophy, precludes us from entering on the two volumes of Political Economy, now published for the first time, partly from manuscripts left by Stewart himself, and partly from notes by pupils. The views expounded will scarcely be regarded as much advancing the science in the present day; but they did good service when delivered for twenty years in lectures. They are still worthy of being looked at on special topics; they may form an interesting chapter in the history of the literature of political economy, and they illustrate the character of Stewart's intellect and philosophy.

An estimate of the influence which has been exercised by Stewart, may form an appropriate close to this article.

In Scotland, he increased the reputation of the Edinburgh University. Horner speaks of "many young Englishmen who had come to Edinburgh to finish their education," and not a few of these had been attracted by Stewart. He has had a greater influence than perhaps any other, in diffusing throughout Scotland, a taste for mental and moral science. We have referred to the power exercised on him by Reid; but if Stewart owed much to Reid, Reid owed nearly as much to his grateful pupil, who finished and adorned the work of his master, and by his classical taste has recommended the common sense philosophy to many who would have turned away with disdain from the simpler manner of Reid. And here we are tempted to give utterance to the feeling, that Reid has been peculiarly fortunate in those, who have attached themselves to his school. If Stewart helped to introduce Reid to polite society, Sir William Hamilton, by his unmatched logic, and vast erudition, has compelled philosophers, to give him—notwithstanding the somewhat untechnical character of his writings—a place in their privileged circle. By his expositions of Reid, and his own independent labours, Mr Stewart aided in throwing back a tide of scepticism, which had appeared in France in the previous century; in England toward the beginning of the eighteenth century, on the back of the licentious reigns of Charles II. and James II.; and in Scotland, about the middle of that century. It appears from letters of Dr John Gregory, published in Forbes' Life of Beattie, that atheism and materialism were about that time in high fashion, and were supported by many who used the name of Hume, but who had never read his works, and were incapable of understanding them. This tide came to a height about the time of the French Revolution, and it was one of the avowed aims of Stewart, "to stem the inundation of sceptical, or rather atheistical publications, which were imported from the Continent." Nor is it to be forgotten, that Stewart directly by his lectures and indirectly by his pupils, contributed as much as any man of his age, to diffuse throughout Scotland a taste for elegant literature, and enlarged and liberal opinions in polities.

As to England, Sir J. Mackintosh, writing to Stewart in 1802, speaks of the want of anything which he could call purely philosophical thinking; and Horner, in 1804, declares, that the highest names in the estimation of those in the metropolis, who felt any interest in speculative pursuits, were Hobbes and Hartely. Such works as the Moral Philosophy of Paley, were fitted to lower still farther, rather than elevate, this taste. It was altogether then for the benefit of English thought, that Stewart did become gradually known in South Britain, where his elegant style, his crowning good sense, and the moderation of his opinions, recommended him to many who had imbibed as great an aversion to Scotch Metaphysics as ever George III. had. There are still persons who abhor the infidelity of Hume, and who despise the plainness of Reid, who suspect the rhetoric of Brown, and are frightened by the bristling nomenclature and logical distinctions of Hamilton, but who are attracted by the writings of Stewart, which are felt to be as pleasing and as regular as their own rich fields bounded by hedge rows. In England he has so far been of use in creating a philosophical spirit, where none existed before, and in checking the utilitarianism of Paley. He is also entitled to a share of the credit, of the great measures of reform, which such pupils as Horner, Brougham, Lord John Russell, Palmerston, Jeffrey, and Lansdowne, have carried in Parliament. Perhaps these eminent men have never estimated the amount of wholesome impulse which they received in early life from the prelections and lofty character of the Edinburgh professor.

In France the influence of Reid and Stewart has been considerable, and has been of the most beneficial character. In that country, Locke's philosophy, unfortunately introduced by Voltaire, and accepted in its worst side, had wrought only mischief, partly by its drawing away the attention of thinkers from the more spiritual philosophy of Descartes, and partly by its tempting a set of speculators to derive all mens ideas from sensation, and to deny the existence of all ideas which could not be derived from this source,—such as the idea of Moral Good, of Infinity, and of God. This wretched philosophy,—if philosophy it can be called —was one of the fatal powers which operated to give an evil direction to the Revolution, and prevented good from issuing out of it. After Sensationalism—which used, but only to abuse, the name of Locke—had reigned for more than half a century, there appeared a reaction led on by M. Royer Collard, who began in 1811 to lecture at the Normal School. It is a most interesting circumstance, that in conducting this war against the debasing systems which prevailed, he betook himself to the philosophy of Reid and Stewart. Exercising a considerable influence in himself, Royer Collard has had a more extended sway through his pupils, especially Victor Cousin and Theodore Jouffroy. In the course of years, the works of Reid were translated into French, with an admirable historical and critical introduction, by Jouffroy. So early as 1808, the first volume of Stewart's Elements was translated into French by M. Prevost, of Geneva; and of late years M. Peisse, has translated the other two volumes of the same work. It is now many years since Stewart's Outlines were translated into the same tongue by Jouffroy, who has prefixed a preface of great judgment and acuteness. It thus appears, that the great reaction in favour of sound philosophy, commenced by Royer Collard, and conducted by Cousin and Jouffroy, has made large and profitable use of the Scottish school, and rejoices to acknowledge its obligations to Scotland. No doubt, it has also called in aid from other quarters. Cousin has been indebted to the school of Kant, as well as to the school of Reid, and has derived some of his favourite principles immediately from the great metaphysician of his own country, Descartes; and he has besides carefully examined the human mind, in an inductive manner; and he has been able to give a unity to these materials, because he is possessed of great original genius, acuteness, and comprehensiveness of mind. We are sometimes inclined to think, however, that he has got the most precious element in his eclectic system, from the school of Scotland. We are greatly gratified to observe, that after he had been drawn aside for a time from his attachment to the Scottish philosophy, by a later affection for German Transcendentalism (this is very visible in his course of lectures delivered in 1828 and 1829), he is now returning to his first love,—and this at a time when Scotland is rather forsaking the inductive method, and turning its regards towards the *à priori* method of Germany. We regard Cousin's review of the Scottish school, as the most faultless, as it is certainly the most generous, of all his historical criticisms. In his review of Locke, he has scarcely done justice to the Essay on the Human Understanding, which he always judges from the consequences to which the system led in France; in his review of Kant, he has not always been able successfully to wrestle with that powerful logical mind; but in his review of the Scottish Metaphysicians, he has shown a most hearty appreciation of their excellencies, while he has offered strictures which are very commonly correct. In the preface to the last edition (1857) of his volume on the Scottish philosophy, he declares that the true modern Socrates has not been Locke, but Reid, that modest and laborious pastor of a poor Scottish parish, who, after passing seven years in the study of himself, in a profound retreat, came forth with a full consciousness of his enterprise, to accomplish a revolution at once great and durable.

"Kant," he says, "has commenced the German philosophy, but he has not governed it. It early escaped him to throw itself in very opposite directions. The name of Kant rests only on the ruins of his doctrines. Reid has impressed on the Scottish mind a movement less grand, but this movement has had no reactions."

Yes, he says, Reid is a man of genius, and of a true and powerful originality; so we said in 1819, and so we say in 1857, after having held long converse with mighty systems, discovered their secret, and taken their measure. We feel proud, we confess, of the eulogiums which have been pronounced on Scotland, not only by Cousin, but by Jouffroy and Remusat. But these philosophers have scarcely seen, after all, wherein lies the peculiar strength of the Scottish nation. This is not to be found in its systems of moral philosophy, but in its religion, of which the high moral tone of its philosophy is but a reflection, which would soon wax dim and vanish were the original light extinguished;—nay, in remembering that Kant was descended from Scottish parentage, we have sometimes thought that his high moral precepts may be also a reflection from the same light. Often, we should think, when M. Cousin has looked around him on these scenes of revolution through which France has passed, and on those terrible attempted assassinations which burst out from time to time, and that grinding military despotism which *still* abides, must he have seen that his country needs something deeper and more influential than any system of moral science, even though it should be as pure and elevated as that which he has been living to inculcate.

In Germany Stewart has been little known, and has exercised no power for good or for evil. The only English philosopher familiarly referred to in that country is Locke, and even he is known, we suspect, more through his French consequences than from the study of his work. The German professors speak of him, under the name of Locké, as the representative of sensationalism, overlooking the constant reference which he makes to reflection as a separate source of ideas, and to the lengthened account which he gives of intuition—a much juster account, in some respects, of its function than that given by Kant or Schelling. The great English ethical writer, Butler, who has established for ever the great truth of the supremacy of conscience in the human constitution, is either altogether unknown in Germany, or referred to by such writers as Tholuck only to show that he is not understood or appreciated. The only Scottish metaphysician thoroughly known in Germany is David Hume. Reid is occasionally spoken of, only to be disparaged in his system and its results. Stewart is scarcely ever named. We must be allowed to regret this. Such a body of carefully inducted fundamental truth as we have in the philosophy of Reid and Stewart, is precisely what was and is needed to preserve thought from the extravagances of the transcendental schools in the last age, and now, in the natural recoil which has taken place since 1848, from the tide of materialism which is setting in so strongly, and with no means or method of meeting it. The philosophy of Germany must ever go by oscillations, by actions and reactions, till the unfortunate critical method of Kant is abandoned, and the inductive method is used to determine the rule and law of those *a priori* principles of which so much use is made, while there has been so little careful inquiry into their precise nature and mode of operation.

This may be the proper place for referring to the relation in which Stewart stood toward Kant. We have already expressed our regret that Stewart should have entered on a criticism of Kant without a deeper acquaintance with his system. No doubt it might be retorted, that the criticisms of Stewart upon Kant are not more ignorant and foolish than those of the disciples of Kant upon Reid; but it is better to admit that Stewart committed a blunder in his review of the Kantian system. Some have supposed that, if he had known more of Kant, he would have formed a totally different opinion of his philosophy. And we admit that a further acquaintance with Kant's works would have raised Kant in his estimation—would have kept him from describing his nomenclature as "jargon," and his philosophy as "incomprehensible"—from affirming that Kant has "thrown no new light on the laws of the intellectual world"—would have shown him many curious points of correspondence between the views of Kant and the profoundest of his own doctrines, and have enabled him, when he did depart from Kant, to give fair and valid reasons, and thus to help in what must be one of the tasks of philosophy in this age—the work of taking from Kant what is good and true, and casting away what is evil, because false. While we admit all this, we are convinced at the same time that Stewart would never have given an adhesion to the peculiarities of Kantism. He would have said, My method of induction is better than your method of criticism, and my account of the intuitive convictions of the mind is correct, when I represent them as fundamental laws of thought and belief; whereas you are giving a wrong account of them, when you represent them as *a priori* forms imposing on the objects in all cognition something which is not in the objects. We cannot conceive him, in any circumstances, allowing to Kant (as Hamilton unfortunately did) that Space, and Time, and Causation are laws of thought and not of things, and may have merely a subjective existence. His caution, his good sense, and his careful observation, would have prevented him from ever falling into a system of nescience such as that to which the relentless logic of Hamilton has carried him, founding, we acknowledge, on premises which Stewart as well as Kant had furnished. He would have adhered, after knowing all, to his decision :—

> "We are irresistibly led to ascribe to the thing itself (space) an existence independent of the will of any being." It is an "incomprehensible doctrine which denies the objective reality of time." "That space is neither a *substance*, nor an *accident*, nor a *relation*, may be safely granted; but it does not follow from this that it is nothing objective." "Our first idea of space or extension seems to be formed by abstracting this attribute from the other qualities of matter. The idea of space, however, in what manner formed, is manifestly accompanied with an irresistible conviction that space is necessarily existent, and that its annihilation is impossible," etc. He adds, "To call this proposition in question, is to open a door to universal scepticism." —(*Diss.*, pp. 596, 597.)

The great work which the school of Reid has done, consists in its careful investigation, in the inductive manner, first, of the faculties of the mind; and, secondly, and more particularly, of man's primary and intuitive convictions. For this they ought to be honoured in all time. Kant did a work similar to this last, but in a different manner. Rejecting (as Reid had done) the combined dogmatic and deductive method of Descartes, he introduced the critical method, affirming that Reason can criticise itself, and proceeding to criticise Reason by a kind of logical process of a most unsatisfactory kind. Criticism has succeeded criticism, each new critic taking a new standing-point, or advancing a step farther, till Hegel's system became the *reductio ad absurdum* of the whole method of procedure inaugurated by Kant. We admit that Kant was right in affirming that *a priori* principles should be examined before they are assumed in philosophical investigation. We are not at liberty to assume a first truth till we have shown it to be a first truth; and we have no right to use it in argument or deduction till we have determined its precise nature and law; but this is to be done, we maintain, in the inductive manner, with its accompanying analysis and exclusions. The Scottish school commenced this work, but they do not profess to have completed it. Stewart everywhere proclaims that it is to be done by the combined efforts of successive inquirers, pursuing the same method for ages.

Reid and Stewart nowhere profess to give a full list, or even a rigid classification, of the intuitive convictions of the mind. All that they affirm is, that those principles, which they have seized for the purpose of meeting the scepticism of Hume, are and must be intuitive. They do not even pretend to give a full account of these, or to express them in their ultimate form.

They vacillate in the account which they give of them, and in the nomenclature which they employ to denote them. They draw no definite distinction between cognitions, beliefs, and judgments. They treated of the faculties, and also of the principles of common sense, but they do not tell us how the two stand related to each other. And here we may be permitted to observe, that we look on these fundamental laws as being the necessary laws of the faculties regulating all their exercises, but not as laws or principles before the consciousness; and they are to be reflexly discovered as general laws only by the induction of their individual acts. Reid and Stewart do not even tell us what are the tests by which their presence may be detected: these we hold to be, first, as Aristotle and Locke have shown, self-evidence; and, second, as Leibnitz and Kant have shown, necessity and universality. Such defects as these they were quite willing to confess in that spirit of modesty which was one of their highest characteristics; and to any one complaining that they had not settled every point, they would, as it were, say, Go on in the path which we have opened; we are sure that there is more truth yet to be discovered, and rejoice we must and will, if you succeed where we have failed, and raise a little higher that fabric of which we have laid the foundation.

Metaphysics, in spite of the prejudice against the name, are at present in a state of revival in this country. A greater number of works on speculative philosophy have issued from the press during the last dozen years, than in any similar period of the history of Britain. The mysteries into which even physical science is conducting us, the deep questions casting up in all branches of inquiry, and, above all, the religious struggles which are working in many a mind, all land in metaphysics. We are anxious that this period of respite to mental philosophy should be properly employed. If this is not done, it must be followed by a time of terrible reaction, in which men revenge themselves for the deceit which has been practised on them. That reaction has already set in powerfully in Germany, where a pretentious idealism has been succeeded by an indifference and a tendency to a very low and loose style of thinking (just as rationalism or intuitionalism has succeeded to Puseyism in Oxford), and where the religious community is at present inclined to turn away from all philosophy, as tending to infidelity, and will not be aroused, we suspect, till they see how fast and how far materialism has progressed, and are *then* made to feel that they have no sober philosophy to meet it. We fear that the flow in this country, at present at its height, may be followed by a similar ebb, in which all will be left barren as a sandy beach. It is with deep concern that we observe the taste, among metaphysicians proper, to be almost exclusively in favour of an *a priori* style of speculation, varied only by historical disquisitions in which all systems are arranged into a few artificial compartments, such as subjective and objective, idealism and sensationalism; while the study of inductive mental science is abandoned very much to the mere physiologist, who never comes in sight of the deeper convictions of the mind. We feel that very high interests, moral and religious, as well as philosophic, are involved in the proper conduct of metaphysical investigation at this instant. We confess that we should like to see it carried on in the very manner and spirit of Reid and Stewart. But let us not be misunderstood. We are not advising a retrogression, but an advance; we are not recommending that metaphysicians should stop where Reid and Stewart stopped, or do over again what they have done, and done so well. What we ask is, that, commencing where they closed, they should do in this age what Reid and Stewart did in their age. Appeal there is enough, in these times, to *a priori* principles; and the special want of the time now arrived, is a determination of the precise nature of such principles, with the view of settling what intuition can do, and, as no less important, what it cannot do.

ART. VIII.—1. *The Right Use of the Early Fathers; Two Series of Lectures delivered in the University of Cambridge.* By the Rev. J. J. BLUNT, B.D., late Margaret Professor of Divinity. London: John Murray. 1857.

2. *An Introduction to the Study of Dogmatic Theology.* By the Rev. ROBERT OWEN, B.D., Fellow of Jesus College, Oxford. London: Joseph Masters. 1858.

3. *Christianity in the Three First Centuries; Historical Lectures delivered at Geneva in February, March, and April* 1857. By Dr MERLE D'AUBIGNE, Dr BUNGENER, Count GASPARIN, and M. VIGUET. London: James Nisbet and Co. 1858.

LET no injustice be done to the Fathers; nor let either the theologian or the philosopher of the nineteenth century withhold from his predecessor of the fourth whatever of honour may be due to his name. If we cannot afford to be fair, we may begin to suspect the goodness of our cause or the purity of our motives.

Truth does not change with time. It may expand, but it cannot alter nor grow rusty; it does not die, nor need to be buried out of sight. Neither does it know old age, but is always young, always elastic, always fruitful. What was once true is true for ever, though man may lose sight of it, or cease to value it. Though not, perhaps, consciously referring to it, we are always making use of it. The pearl is the pearl always, wherever it is found, and of whatever age: so the truth is always true, though written centuries ago, amid the mists and marshes of cloudier ages; and the falsehood is always false, though elaborated amid the sunshine of a scientific age, and adapted to the "progress" and intellectual enlargement of these bolder and, as is supposed, less fettered times.

Error is unjust and irritable: truth is calm and generous, hating injury, and loving to do justice to an adversary. It will profit us nothing to wrong the memories of those who, even though they may have spoken untruly, were yet as free to speak and write as we, and who are as well entitled to a fair judgment upon what they have promulgated as we. If, as has been said, all violence is loss to him who makes use of it, no less is all unfairness a wound inflicted upon truth.

There is a sect in our day (as in other days) which refuses to *judge* the Fathers, and avows itself a mere listener to their instructions; nay, which refuses to listen to anything else (even the Bible), save in so far as in harmony with patristic teaching. Of course these Churchmen must go the length of *understanding* the propositions of doctrine that come before them, otherwise they could not discover the divergence; but they *understand*, not in order to exercise free judgment, but only in order to *submit.* Patristic infallibility is their axiom, either latent or proclaimed. Submission to the code of patristic law is the foundation of their ecclesiastical commonwealth. *Patrolatry* with them is a virtue; *Bibliolatry* a crime and a superstition.

The sad assumption here is, that the Scriptures are so written as not to be intelligible in themselves; and, if so, that they do not furnish a foundation for faith to rest on: for if an interpreter be necessary, then he becomes our real oracle, and his interpretations our authentic and inspired Scripture. Such was Joseph's exposition of the Egyptian's dream; such was Daniel's interpretation of the Babylonish writing on the wall.

The assumption is, moreover, as untrue as it is sad. The Bible is a considerably more intelligible book than the works of the Fathers, and the latter stand much more in need of comment and elucidation than the former. It would require some boldness to maintain the opposite; yet this is the very position tacitly maintained by thousands, and used as the basis of their operations in their defence of ecclesiastical superstition. Confuse and mystify the formula as they like, when reduced to a simple equation, it is just the intelligibility of the Fathers *versus* the intelligibility of the Scriptures.

Of course, such an attempt to prove Scripture unintelligible must have an object in view. Such an assault upon what is Divine would not have been thought of, had there not been a necessity for it. That necessity is the plain antagonism of Scripture to systems which they are committed to uphold. Bunsen says truly, "The antagonism between the Reformation and the Mediæval Church is irreconcileable." No less great is the antagonism between the Apostolic and the Mediæval Church. It is their *dread* of Scripture that has driven these men to set up a rival. Had it been as clearly *for* them as it is *against* them, no "catena Patrum" would have been forged, nor any grave denunciations heard against the peril and the irreverence of studying the Bible without ecclesiastical help. The testimony is so explicitly adverse, that means must be taken to silence the witness, or falsify his witness-bearing. Say what the arguers will, this is the secret (in many cases unconscious) meaning of the arguments in favour of patristic authority.

Now, my good friend of the cloister or the church, do you really see the bearing of your own arguments? Do you wish me to understand you as saying that you, by means of the Fathers, can make plain that which the Holy Spirit has made obscure? Do you mean to say that God has failed to make Himself intelligible to His creatures, and that you must therefore step in to make that light which God has made darkness?

Be the Fathers ever so excellent and sound, we are under no bond to receive them or their sayings. We prefer the plain Word. We find it more powerful, and much more easy to understand; possessing, moreover, a unity of purpose, meaning, and teaching, from beginning to end, which we in vain seek for amid the dissonances and contradictions of Irenæus, Tertullian, Jerome, Chrysostom, and Augustine.

More discreet ecclesiastics moderate their tone. Whether they are not, after all, quite as thorough *Patrists* as the others, we do not say. They are, however, more moderate in spirit, and less extreme in statement. What they claim for the Fathers is not authority to enunciate doctrine, but to *test* it. Their writings are *tests* of doctrine, no more. To their interpretations of Scripture we must bring ours; and if we do not find ourselves in collision with them, we are at liberty to hold what we have excogitated. Thus much we are free to think for ourselves, or to study Scripture for ourselves. In so far as the Fathers have not thought for us, we may think freely, and with some hope of being original without being unsound.

Such is the liberal concession made to us by some who disclaim Romish and Anglican intolerance. They would call this a large, almost an undue concession, and ask us to give them credit for singular fairness of purpose and of judgment.

We are not disposed to do so. They seem to us to wish to serve two masters, and to stand well with two ages. Their two masters are the Church and Christ; the two ages are the first three centuries and the last three of our era. Certainly the two masters ought to have been but one; and in serving the Church, they ought to have been serving Christ. But history tells another tale. The interests of these two masters have not been identical, nor their rules of service at all times in harmony. He who would devote himself to the historical Church of Christ, must give up the attempt to serve Christ Himself; and he who would agree with and obey Christ, must break with the external Church, and venture to differ from the authorised exponents of its creeds and laws. The two ages, in like manner, ought to have been at one, both dogmatically and ecclesiastically; so that it would have been the same thing for us to say, I believe what the third century believed, as to say, I believe what the sixteenth century believed. But the diversity between these two periods is quite appalling; so that one is sometimes led to put the question, if Origen and Cyrill were Christians, how can Luther and Cranmer be so? or, if Luther and Cranmer were Christians, how could Origen and Cyrill have been such?[1] It is in vain to attempt to stand well with both. We must make our choice between them.

We do not mean to deny that there is a difference between authoritative *oracles* and authoritative *tests*. A test is negative, an oracle is positive. A test possesses no self-originating power of utterance, but simply answers doubtful questions. Thus far there seems to be a restriction of patristic authority, and a lowering of ecclesiastical pretension. But one feels still that acquiescence even in the restriction is a large and perilous admission for truth, and Scripture, and liberty of thought.

A test is of small service if it be not absolutely certain. A chemist's tests are infallible. If they were not, science would discard them as useless. A test, too, must be complete. It must not admit of appeal to other tests more complete or more certain. It must of itself decide the point to which it is applied. To concede such a testing authority to the Fathers, is in reality to concede everything. If their weights and measures are to be assumed as infallible in the weighing of truth and error, then they are *judges*—supreme judges—in all cases on which they have given any decision. To grant a *testing* power, is to grant a *judging* power,—a judging power to which every Christian must surrender himself, and from which there can be no appeal. The maintenance of patristic authority to *test* doctrine, must involve, as a preliminary, patristic *infallibility*. If that can be proved, the testing power will follow as a matter of course.

Assuming the *theory* of patristric testing, still the *practice* is rather troublesome. Even to the most resolute advocates of the Fathers, the process must frequently be difficult, and rather of an unsatisfactory nature. On some points the Fathers have not determined at all; and this leaves the unhappy Church, or more unhappy Christian, to the mercy of individual judgment. On other points the Fathers have given such an uncertain sound, that we can apply the infallible test only in a very vague way, and to a very partial extent. On other points the Fathers have given such sadly contradictory judgments, that the matter in question is placed more awkwardly than any indeterminate problem,—for there ensues the conflict of opposing infallibilities. To have infallibility on one's side is most comfortable; to have it against one is by no means so; but to have it both *for* and *against* is, of all predicaments, the most awkward in which man was ever placed. There is nothing like it in the known world, whatever there may be in the unknown. It is a position from which neither faith nor reason can assist in extricating us. To speak of doubt in such a case is absurd; it is something far worse than doubt. To speak of halting between two opinions is a total misnomer; it is to be torn in pieces between two divellent omnipotencies. Urged by infallibility to receive a doctrine, and urged by a counter infallibility to reject, the miserable soul must feel that of all perplexities this is the most hopelessly perplexing, and of all mental tortures this is the most terrible. There is no word in philosophy, or science, or Scripture, to denote such a state of mind.

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[1] We are persuaded that the more one studies the Fathers (*Augustino excepto*), and compares them with the Reformers, the more will such a question as the above most painfully press itself upon him. He will put down the rising impression, but it will recur in spite of himself. We are sorry to see Dr Merle D'Aubigne eulogising Origen as "the greatest luminary of ecclesiastical antiquity" (*Christianity in the First Three Centuries*, p. 209). Concede to Origen learning, fervour, and a self-sacrificing life; but do not canonise as a luminary one who did more to darken Scripture and to obscure some of its fundamental truths than any Father of the first five centuries.

This is no picture of the fancy. It is something actual and real, as the reader of the Fathers will speedily discover.

Suppose that I have leanings towards Episcopacy; and that I gather, so far as my fallible judgment leads, that the bishop is the apostle's successor, and by his office exalted above the presbyter. I must have this notion of mine tested by the Fathers. I go to Cyprian, and there I find my opinion corroborated to the full. If I am to believe Cyprian, there can be no doubt that Episcopacy is the true government of the Church. But, wishing to apply more tests than one, I go to Jerome. There I find the broadest affirmations against the superiority of the presbyter.[1] He teaches me Presbyterian parity. What am I to do? which of these tests must I abide by? If both are infallible, then my position is certainly most unenviable. Suppose I am disposed toward Arminianism. I must *test* my opinion, which I may have gathered from Scripture. I go to Augustine, and there I find Arminianism attacked in almost every page, and Calvinism maintained with a scriptural precision and metaphysical acuteness which Calvin himself never surpassed. If I am to believe Augustine, the very foundations of grace are associated with God's predestinating purpose and sovereign election. My Arminianism gives way before this test. But I go to Origen, and I find there Arminianism, and something more. I find Universalism in its widest sense—

> "Ill annihilate
> The restoration of the angels lost,
> And one salvation universal, given
> To all create."[2]

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[1] "Idem ergo est presbyter, qui et episcopus; et antequam, diaboli instinctu, studia in religione fierent, communi presbyterorum consilio ecclesiæ gubernabantur. Postquam vero unusquisque eos quos baptizaverat, suos putabat esse, non Christi, in toto orbe decretum est ut unus de presbyteris electus, superponeretur ceteris," etc.—*Comm. ad Titum.*

[2] Bailey's Festus.

If I am to believe Origen, I must be more than an Arminian; and I must, moreover, believe that nearly one-half of what Augustine has written is as anti-apostolic as it is untrue. Of what avail to me is the patristic test? It serves me in no stead at all, save to distract and to confound me. Suppose I am satisfied in my own mind, from Scripture, of the truth of the Trinity: I go to Athanasius, or Basil, or Didymus, and I am fully confirmed in my judgment. But I turn to Origen or Dionysius, and I learn from them the inequality of the three persons in the Godhead, and that the Holy Spirit is not God, as is the Father, and as is the Son. Am I then to acknowledge in Athanasius infallible truth, and in Dionysius infallible heresy? Suppose, once more, that I am satisfied from Scripture, that without holiness no man can see God, and that a holy life, or at least decent morality, ought to be found in a Christian, specially in a canonised saint. I look to John Chrysostom, and find, both in his life and writings, all that I can desire to confirm my judgment. It is well. Morality and infallibility in him thus go happily together. But I turn to *Saint* Cyrill of Alexandria, and I find in him a villain of the reddest dye, unfit to breathe the clear air of this sunny earth; I turn to *Saint* Damasus, and I discover him wading through blood to the Pontificate, or revelling in the brothel, the victim of lust and wine! How is he to test my moral principles? Or whether am I to believe Damasus or Chrysostom, Cyrill or Bernard?

These results arise from an undue deference to the Fathers. Had their friends just allowed their writings to stand for what they were intrinsically worth, no such mischief would have ensued, and no recoil upon themselves taken place. But these friends have claimed for them a reverence, to which many of the Fathers made no pretensions. By this improper and unwise exaltation of their favourites, they have led to an opposite depreciation of them, and provoked a scrutiny, which, if it has not always been fairly conducted or impartially summed up, has this to urge on its own behalf, that it was forced upon the Church by the extravagant laudations, and arrogant pretensions of patristic partisans. A man who by his weak admirers has been too lavishly bepraised, must endure the compensation of being immoderately depreciated.

Daillé and Barbeyrac have incurred no small censure for their exposure of the Fathers, and an unscrupulous one-sidedness has been ascribed to them by some writers of learning. They form the text-books of Professor Blunt's Lectures "on the Right Use of the Early Fathers;" and the reader of these lectures might almost surmise that they were meant more as a running refutation of these formidable Frenchmen, than as direct discourses on the Fathers themselves. Daillé certainly has encountered in

Professor Blunt one who could do considerably more than sneer or snarl at him, as some have done when they could do no more; but the careful and elaborate character of the Professor's volume is enough to indicate that, in his estimation, Daillé was no mean antagonist. Learning and labour have been expended to the utmost in this vindication of the Fathers. It will be difficult for any succeeding writer to say more in their defence, or to plead their cause more strenuously, with larger appliances, or with greater likelihood of success, than the "Margaret" theologian has done. Though not an unconditional nor superstitious apologist, he brings all his learning to bear upon their defence, leaving nothing unsaid which might set forth their perfections or cover their defects. He would not like to be committed to all that they believe; but he cannot suffer a voice to be lifted against them, and there are few points of the multifarious patristic creed which he would altogether quarrel with—save, perhaps, Augustine's Calvinism, to which, it is evident, he would greatly prefer Origen's Universalism, if he were compelled to make a choice.[1]

There is, however, very much more to be said in favour of Daillé than the "Margaret" professor will allow. Into the minute questions as to fairness or unfairness of citation or application, we cannot enter; but the following remarks seem quite sufficient to meet, at least, most of the general charges brought against the Parisian pastor. One of his great designs is to lower, or, if you will, to destroy the credit of the Fathers as theologians and reasoners. Granting that Daillé's specimens are not adequate representations of the Fathers, and that a volume, much larger than his, might be compiled with quotations as noble as the others are unworthy, this is nothing to the point. His design was not to defame the men by a one-sided representation, which should embody only their faults, not their excellencies: his object was to show that, even though the men were capable of writing what was true and good, they had, by the amount of the untrue and the evil embodied in their pages, shaken irretrievably all confidence in their judgment, and damaged beyond remedy their claims to authority in the Church. The men who could give utterance to such sentiments as they have done in some places, who could indulge in such speculations, who could seriously propose such interpretations, who could promulgate such doctrine as they have done, are not entitled to any pre-eminence, as an authorised ecclesiastical court of appeal, to any deference as a standard of doctrine, or even to any weight as authentic preservers of apostolic teaching. So wide is their divergence from manifest Scripture statement, so extravagant their speculations, so notorious their heresies, so contradictory their opinions, so crude and poor their expositions, that no amount of truth, or beauty, or acuteness, or eloquence, can so compensate for or balance ascertained flaws and errors, as to restore them to the confidence of Christian men. They may be studied still for the many precious things contained in their noble folios; but these good things cannot be set down as "redeeming qualities," in so far as their *authority* is concerned. The discovery of these enormous and frequent blemishes undermines our trust, even though it may not destroy our admiration or our love.

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[1] Indications of this same peculiar admiration for the Fathers, without absolute assent to their dogmas, we find in Trench, whose Notes on the Parables and Miracles are an excellent synopsis of patristic expositions, and a good translation of the best of Olshausen's Criticisms. In one of his foot-notes he quotes the following sentence from Menken:—"Many so-called Church historians (authors of *Ancient Christianity* and the like), ignorant of the purpose and of the hidden glory of the Church, have their pleasure in the tares, and imagine themselves wonderfully wise and useful, when out of Church history, which ought to be the history of the light and the truth, they have made a shameful history of error and wickedness. They have no desire to edify, to further holiness or the knowledge of the truth, but, at the expense of the Church, would gratify a proud and ignorant world."—(*Notes on the Parables*, 94.) The fling at Mr Isaac Taylor, within brackets, seems to be Trench's, not Menken's, and betrays the animus of the writer,—if, indeed, that were not sufficiently indicated by the uncharitable acerbity and unphilosophical childishness of the extract itself. Menken's theory, thus endorsed by Trench, is that we are to falsify history rather than expose the errors of the Fathers. Mr Trench's love for Augustine seems not to have overcome his dislike at Calvinism any more than Professor Blunt's; and in his Synonyms of the New Testament (p. 80), he has an attack on *gratia irresistibilis*, as that by which man is turned "into a mere machine," and "by which, *nolens volens*, he is dragged to God." It is not pleasant to observe Mr Trench turning thus aside from his way, in order to have a stroke at "evangelical" religion; and elsewhere turning aside to praise Krummacher's (the elder) Parables, in order to have a fling at the "popularity" of the other Krummacher, author of Elijah the Tishbite. The "Parables" thus lauded are poor—very far inferior to the other work above named.

As to the number and grave nature of these flaws, we shall not say much. This only we may, not invidiously, but with all honesty, remark: that it would be impossible to cull from any other set or school of authors such numerous and flagrant absurdities as have been gleaned from the Fathers. Take the Puritans, as a school, and sit down to study them for the discovery of flaws and errors. Deal with them as Daillé has dealt with the Fathers; deal with them more unsparingly, or unfairly, as Professor Blunt would say; gather into one volume all the misinterpretations, and conceits, and words of coarse taste, with which they are affirmed to abound; and will you produce anything of the kind which Daillé has done? Will the whole collection amount to the one-tenth of his? Will the specimens produced at all equal his in grotesqueness, and anility, and extravagance? Or take some representatives of the Fathers and Puritans, say three against three—Jerome, Augustine, and Chrysostom, on the one side, and Owen, Goodwin, and Manton, on the other; employ a lofty Churchman to select all the deformities of the Puritan trio, and an "irreverent Dissenter" to gather all the blemishes of the patristic trio, and there can be no doubt that the compilation of the latter would immeasurably out-bulk that of the former. Grant to the Fathers the genius of being able to speak things bright and noble, you must grant them also the talent of saying things stupid, and wild, and ridiculous; while, if the Puritans are denied the former kind of genius, they must certainly be acquitted of the latter. If they have written fewer *notabilia* for admiration, they have written fewer *memorabilia* for censure.

Yet, indeed, we do not admit the former. Puritan authorship will suffer nothing from comparison with patristic. The dogmatic theology of the former, estimated in what way you please, will appear a well-knit, well-reasoned, systematic thing, when compared with the loose dogmatic theology of the latter. The hermeneutics of the seventeenth century are far superior to those of the fourth. The philosophic reach of Thomas Goodwin is quite equal to that of Augustine, and the learning of Jerome is overshadowed by that of John Owen.

One remark respecting the Fathers we should like to make, as a sort of protest, *in initialibus*, against the whole theory of patristic authority. We do not believe that the Fathers are really the representatives of the Church in their different ages. Admitting that we are to listen to the voice of the Church, we deny that the Fathers are such. They represent the opinions of a certain number in their day, as Maurice represents those of a certain class in ours, or as Hoadly represented those of a class in last century, or as Jeremy Taylor represented another class in the century before; but that is all.

To call Origen, or Augustine, or Bernard, the voice of the Church, is simply to utter a historical falsehood.

In more senses than one is it a falsehood. Not only have we reason for believing negatively that they were not so; we have many curious hints in ecclesiastical history, warranting us in affirming that they were the chosen instruments made use of for silencing the true voice of the Church.

The true voice of the true Church has not always been uppermost on earth, nor most loudly heard.

> . . . . Her voice was ever soft,
> Gentle, and low.

Like Him whom she calls Master, she "did not cry, nor lift up, nor cause her voice to be heard in the street." Hence there was not much difficulty in drowning it, and in substituting another voice, superior in power of vociferation, in its place. The ecclesiasticism which usurped the throne of the Cæsars soon supplanted the true Church of God. Of this regnant ecclesiasticism the Fathers were the accredited delegates and authentic expounders. For the representatives of the true Church—the Church of Christ, the Church of the Apostles—we must look elsewhere. Possibly they may be hardly discernible or discoverable, yet they ought to be searched for.

Shall we say that Origen represented the Church of Christ in his day?—Origen, that denied nine out of ten vital points of the Christian faith! Impossible. He was the personification of learning, labour, and endurance; but as for the knowledge of Him who finished the propitiation on the cross, it is not to be gathered from his pages. Some unknown Alexandrian, without philosophy or learning, but with simple faith in Him who died and rose, would have been the true witness for Christ, and the true representative of His Church. In spite of the honour paid to him as the most learned of the Fathers, and in spite even of the eulogies heaped upon him by Merle d'Aubigne, we are constrained to turn aside from him as a specimen of the Church, and to look on him as a denier of much of the truth which the Church, if true to her name, could never have lost sight of.

Who represents the Church of Christ in the fourth century? Ambrose of Milan? He teaches holy lies and the worship of dead men's bones. Are his words then the voice of the Church, or the Apostles, or of Christ Himself? *Saint* Damasus? He who first coerced the empire into the worship of Mary as the Mother of God, in room of Cybele, who had hitherto been worshipped with the same honours as Mother of the Gods? Basil, surnamed the Great? He, the author of the liturgy in which Mary is prayed to as a goddess, and as the Mother of God? Cyrill of Jerusalem? He is a childish fanatic, a sacrilegious stealer of the Church's gold and silver. Jerome of Bethlehem? He is the learned child of self-righteousness and superstition. The voice of Christ's Church was assuredly not heard in these. Each doubtless represented a class; but none of them represented the Church. Who is the Church's voice in the fifth century? Cyrill of Alexandria? He who headed a ruffian mob, and cheered them to the slaughter of 40,000 Jews, and smiled as they stripped naked and tore in pieces the young Hypatia?[1] Let not his title, "Champion of the Virgin," be denied him; for never did a Pagan more vehemently maintain the worship of Cybele, or

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[1] It is of this vile transaction that Toland, the infidel, takes advantage to attack Christianity. He published, in 1730, a book called "Hypatia, or the History of a most beautiful, virtuous, learned, and accomplished lady, who was torn to pieces by the clergy of Alexandria, to gratify the cruelty of their Archbishop, undeservedly styled Saint Cyril."

Maia, or Juno, than he does of Mary, who, by a simple change of names, had quietly come into the room of these heathen goddesses, and taken possession of their temples and their honours.

There can be little doubt that it was Gibbon's careful study of the writings of these saints and Fathers that led to his contemptuous hatred of Christianity. Being told, alike by Protestants and Papists, by Greeks and Latins, that these Fathers were the representatives, nay, the true aristocracy of the Church of Christ, the incarnation of Christianity, and the model of morality and holiness, he was naturally led to form his opinion of their religion from what he found in their works. They were the acknowledged expositors of Christian faith and practice; and they were referred to by all, without exception almost, as bright specimens of Christianity. Their history was reckoned the veritable history of the Apostolic Church from the day when the last apostle died at Ephesus. Nay more, the very Scriptures that Christians called Divine were to be understood according to the interpretations of these ancient men. Some said that the Fathers were authoritative, some said that they were merely tests, some said that every Father was infallible, others that only the universal conclave was so; but all agreed in this, that these men were the noblest in rank of all the Christian commonwealth, and that their writings contained the very cream of Christian truth; that their voice was to be listened to most deferentially, as their persons were to be approached reverentially.

All this Gibbon knew; and accordingly he looked at Christianity, just as a philosophical historian naturally would, through the medium of its acknowledged standards and representatives. He assumed the Fathers to be just what all Christians told him they were, and he judged Christianity by them. Instead of judging the Fathers by the Bible, he judged the Bible by the Fathers.

Finding in these Fathers a hideous jargon of dogmas more irrational than those of Paganism; a less pure morality than he found in the classics; the inculcation of falsehoods for religion's or the Church's sake; actions done and praised, such as either Romans or Spartans would have blushed at; he could hardly fail to deduce the conclusions that he has done, or to sketch the pictures that he has drawn.

Assuming the Fathers to be what they are generally accredited with being, and to have the authority which Romish or High Church partisans ascribe to them, it is hardly possible for a thoughtful and thorough student of them to avoid utter scepticism as to all religious truth. "If this be Christianity, give me honest Paganism." If the study of the Fathers did not find Gibbon an infidel, it made him one; and it gave to his infidelity that cool, contemptuous acerbity which pervades his works. Identifying biblical with patristic Christianity, and either unable or unwilling to discriminate in a matter which every one said admitted of no discrimination, seeing that Apostles and Fathers were one in faith and practice, he writes as one who had found it impossible to believe that such a system could be Divine, or that it could be credited by men of integrity or intellect.

Infidelity in such a case seemed as natural as did contempt for those who could be anything but infidels. With much inexcusable error and malicious colouring of facts, there is a *latent truth* at the bottom of Gibbon's sneers, which, like a spectre from the pit, might well appal the idolaters of the Fathers, and ought to awaken to deep thoughtfulness every Christian mind.

The Apostolic Church had a succession in all ages—true and unbroken; but not necessarily visible, and not always among those whom nations have honoured or churches canonised. Liturgical calendars of saints' days, either fast or festival, are not the places in which to read the names of those who are written in the Lamb's book of life. The real Church history of many a century remains unrecorded upon earth. The thick-growing tares have been noted and registered, the wheat has ripened and been gathered in unnoticed; nay, the tares have been written of as wheat, the wheat as tares. It is now too late wholly to remedy the evil, or to re-write Church history; but the day of true history, as well as of righteous judgment, will at length arrive. The evil shall not then be known as good, nor the good as evil. Wronged names shall be fully righted; the truth and the lie shall be brought up to day, and the hidden ones of fifteen centuries shall start gloriously into honour and reward.

No history—not even that of Carthage by Rome—has been so one-sided or unjust as that of the Church. All Church annals, from Eusebius downward, are written by the dominant ecclesiasticism of the day. What then could we expect but partiality, either in eulogium or censure? We should not trust Wiseman to write a fair life either of Luther or of Mastai Feretti. "Reminiscences of four Popes" are not likely to be credited, any more than "Lives of four Reformers" would have been by the same hand. What picture of Calvin would Tomline have drawn; what history of the Reformers could come from Newman, of Covenanters from Napier, of Methodists from Robert Southey, or of Evangelicals from Henry Drummond? In His providential sovereignty, God has so ordered it, that the true Church-life should remain hidden—the name, the love, the faith, the holiness, of His genuine Israel unknown. They had none to write of them who could appreciate them, and they who could appreciate them had neither the pen nor the voice that would be listened to or regarded.

Writing and publishing in early centuries was a formidable thing to men who had no patronage, nor wealth nor influence. They who had none of these must suffer wrongs unredressed, and hear slander heaped upon the helpless, without being able to reach the ear of the public in their defence. They might speak, but they were unheard; they might write, but they were unregarded. Voice and pen were alike useless; opinions were misrepresented; characters calumniated; names branded as identical with schism and heresy, which in purer ages would have won honour and love.

A juster ecclesiastical history is now coming to the conclusion, that many of those who have been hitherto named heretics were protestors against the errors of the age, and assailants of the pretensions of an all-powerful hierarchy. Such men as Novatian, Nestorius, Vigilantius, and Apollinaris, have not deserved the evil report which has for upwards of a thousand years, both among Protestants and Romanists, overshadowed their names. We have no account of them save from unscrupulous enemies. Their works have perished, and the fragments by which we have judged them hitherto are gathered from the pages of controversialists, whose enmity discoloured and distorted everything. It has been Rome's practice to affix the name of heretic to any one who doubts her dogmas or discredits her pretensions; nor has she greater heretics in her list than Luther and Calvin. We have given no heed to her calumnies against good men during these last three centuries; but most perversely and unaccountably have we retained her post-apostolic as well as her mediæval nomenclature. We still acquiesce in her condemnation of those whom we may call her earlier heretics, and trust her judgment both as to their opinions and their characters. We have reversed her decision which condemned Huss to the flames; but we have not reconsidered, far less cancelled, her criminating decrees against Apollinaris, and Nestorius, and Vigilantius.

How slowly do we learn to be just! How inveterate is the prejudice of history! Must we go to Gibbon for a true idea of that which we have have so long persisted in calling "the Church?" Must we learn from him the true story of that which we have long called Christianity; but which was in fact nothing but Christian Platonism or baptized Paganism?

It is well to do justice to our own flesh and blood of the Reformation, and to hurl back the name of heretic, so liberally lavished on them by Rome. But there are others whose wronged reputations call for justice as loudly as these. In accepting the name of heresy and the title of heretic from the dominant ecclesiasticism of ten centuries, we have joined in one of the foulest persecutions that was ever planned, persecutions against the characters of the true saints, the veritable Israel of God. We have not only authenticated the canonised pandemonium of the great Antichristian apostasy, and acknowledged as saints the enemies of the cross of Christ; but we have equally homologated her aspersions of men " of whom the world was not worthy."

What was the heresy of Nestorius? He protested against the use of that epithet of Mary, which is Rome's watchword, and the seed of her Mariolatry—*θεοτοκος*. It was not merely that he was stumbled at the old Pagan title of Cybele being applied to the mother of Christ; but he perceived its unscripturalness, and he foresaw the germinant creature-worship of which it was to be made the vehicle. Hence he was accused of separating the natures of Christ; though he separated them no more than we do now, who freely own Mary as " the mother of Him who is God," but who repudiate as unscriptural the name, " Mother of God." A tyrannical hierarchy condemned him; and we to this day join them in casting out his name as evil. He threatened to be a troublesome protestor, with both Scripture and antiquity on his side; and he had to be written down by the " powers that were," and proclaimed a heretic.

What had Apollinaris done to merit the evil reports the Church history has loaded him with? He was a man of genius and refinement evidently; one who loved poetry and wrote Christian hymns for the Church. He was a man too that loved and studied his Bible. But he had in some way offended the priesthood. Probably he was too independent for them. He was charged, as usual, with heresy. Taking even the representation of his enemies, his errors arose from jealous fear of encroachments upon the supreme Godhead of his Lord. His words were distorted by his enemies into heresy. Athanasius and Basil set about writing him down. This was soon accomplished; and the Christian poet of his day, the scholar of his age, the simple Christian man, was silenced. His works are not extant; and even his hymns have perished.

Do these statements seem extreme? Let the student inquire for himself. He will find that more of Church history requires to be re-written than he is aware of. If we are too anti-patristic, there are not wanting Churchmen who will, with all cordiality, set us right. We shall have done no great harm, if we have suggested the necessity for further excavations under the venerable mounds and towers of Babylon the Great. There may be gems buried there, the discovery of which will repay the most expensive and elaborate research.

Neander does a little in this way; and has not been quite so tractable as other Protestant annalists, nor so afraid to move out of the beaten path of time-honoured ecclesiasticism. Would that he had ventured a little farther. We are sorry to find the Swiss historian of the Reformation so completely satisfied with his patristic trammels. He and Gasparin, and Bungener and Viguet, might have been expected to have hesitated a little before endorsing so many of Rome's panegyrics on Saints and Fathers.

Professor Blunt is too much of an apologist for the Fathers to suit our ideas of a true Church historian. Mr Owen is not so much an apologist for the Fathers as an expositor of their works. Higher, we suspect, in his Churchmanship than even Blunt, he has given us a readable, and in many respects a fair, candid, and temperate volume. It is somewhat of a *Catena*, and gives us liberal extracts in every chapter. Probably he would "go through" with his principles, and reverence all that he finds in the old folios of the Church. In his chapters on Predestination, he seems frankly to accept the *Calvinism* of Augustine as part of patristic theology. Not so Professor Blunt. He cannot accept Calvinism even as Augustinianism; but dislikes and condemns it in any form. Was it in irony, or was it in the excess of his anti-Calvinistic zeal, that he parades Origen's Universalism as a proof that he was no Calvinist? Of course, the man who mutilated the doctrine of the Trinity, who held Purgatory, who accounted for the existence of evil by the pre-existence of souls, who denied eternal judgment, and maintained the salvation of men and devils, was no narrow-minded Calvinistic, no pinched exclusionist. But surely anti-Calvinistic Churchmen, whether low or high, cannot strengthen their cause by appeals to such defenders of the faith as the Egyptian Platonist! It is no discredit to Calvinism that it was attacked and undermined in early ages by the *Origenistic* philosophy.

God has spoken to us by His prophets and apostles; above all, by His Son. He has not so spoken to us by any since the apostles passed away. Assuredly He has not so spoken to us by the Fathers. The teaching of these last is not *divine* teaching, even though it were much more perfect than we have found it to be. Their vast volumes may embody much truth, much eloquence, much genius; but they bring us under no responsibility either to hear or to obey. Let the Fathers take their place in the shelves of human authorship, and be ranked according to the amount of truth which they may be found to contain. Let their dogmatic theology, in so far as it was harmonised or systematised, stand for what it is worth. Let their expositions of Scripture be duly consulted and studied; but let them not be set up as oracles, or judges, or tests. Let them not be taken as representatives of the Church of Christ.

ART. IX.—*Rifle Practice.* By Colonel JOHN JACOB, C.B., of the Bombay Artillery, Commandant of the Sinde Irregular Horse, etc., on the frontier of Upper Sinde. With Plates. Fourth Edition. London: Smith, Elder and Co.

"OVER earnest shooting," says Roger Ascham, who, at Cambridge, taught Greek in the days of King Henry VIII., "surely I will not over earnestly defend, for I ever thought shooting should be a waiter upon learning, not a mistress over learning.

"Yet this I marvel not a little at, that ye think a man with a bow on his back is more like Robin Hood's servant than Apollo's, seeing that Apollo himself, in Alcestis of Euripides, in a manner glorifieth, saying this verse—

'It is my wont always my bow with me to bear.'

Therefore, a learned man ought not too much to be ashamed to bear that sometimes which Apollo, god of learning, himself was not ashamed always to bear. And, because ye would have a man wait upon the Muses, and not at all meddle with shooting, I marvel that ye do not remember how that the nine Muses themselves, as soon as they were born, were put to nurse to a lady called Euphemis, which had a son named Erotus, with whom the nine Muses, for his excellent shooting, kept evermore company withal, and used daily to shoot together in the Mount Parnassus; and at last it chanced this Erotus to die, whose death the Muses lamented greatly, and fell all upon their knees before Jupiter, their father, and at their request, Erotus, for shooting with the Muses on earth, was made a sign, and called Sagittarius, in heaven. Therefore you see that if Apollo, and the Muses, either were examples indeed, or only fained of wise men to be examples of learning, honest shooting may well enough be companion with honest study."

So says honest Roger Ascham, who also praises shooting in the following terms:—

"Therefore, to look on all pastimes and exercises, wholesome for the body, pleasant for the mind, comely for every man to do, honest for all other to look on, profitable to be set by of every man, worthy to be rebuked of by no man, fit for all ages, persons, and places, *only shooting* shall appear wherein all these commodities may be found."

"My choice, says a bold soldier of the time of Charles I., "in the day of battel, and leading a storm, or entering a breach, with a light brest-plate and a good head-piece, being seconded by good fellowes, I would choose a good *halfe-pike* to enter with."

"Man," says Colonel John Jacob, C.B., "has been called a tool making animal; and, it is certain, that the perfection of tools and machinery is a clear and certain mark of advancing civilisation, of the progress of the rule of mind over matter, of the development and operation of these laws by which the working of the human brain makes the force of one civilised man equal that of the stalwart limbs of thousands, or even millions, of untaught and ignorant barbarians.

"If such be the value of the tools employed in the arts of peace, those used in war must be even of greater importance. On success in war often depends the power to follow peaceful pursuits; on the high state of the art of war, the practice of all other arts may depend."

"Whatever state," says the clear-headed Robins, writing a hundred and ten years since, "shall thoroughly comprehend the nature and advantages of rifle pieces, and having facilitated and completed their construction, shall introduce into their armies their general use, with a dexterity in the management of them, will by this means acquire a superiority which will almost equal anything that has been done at any time by the particular excellence of any one kind of arms, and will, perhaps, fall but little short of the wonderful effects which histories relate to have been formerly produced by the first inventors of firearms."

"The nation," says a writer of the present day, "that takes thoroughly to the rifle is impregnable."

To national impregnability, which means national independence, there are three military requisites: the first, the weapon that shoots far; the second, the half pike, or short spear, for the close thrust; the third, the union of these two into a single weapon. That weapon is the *rifle.* The rifle, with its bayonet, which no man can handle like the British man, is, in fact, the symbol of the national union which made a United Kingdom out of two independent monarchies. The bow was the national weapon of England, the spear the national weapon of Scotland. The two combined in the bayoneted fire-arm; and the bayoneted fire-arm is now the rifle, which, without a shadow of doubt, is the most powerful and most practical weapon ever placed in the hands of a soldier.

On the present occasion, therefore, we propose to offer a few cursory observations on rifles, neither scientific nor historical—though both might be interesting in their way—but actual. We shall inquire neither into expansions nor contractions, angles nor curves, parabolic hypothesis, nor alarming mathematical symbols, which hitherto have not shed much greater light on the practice of rifle-shooting than they did on the cognate problem of ship-building. Nor shall we ask when the long-bow, which, with its cloth-yard shaft, has such a marvellous history of battles fought and won, first came into use in England; whether it be of the East, and came with the Norman, who—we have a theory—was of Eastern origin; nor how it fell into the hands of the English Saxon; nor how the English bowman, who was known, as some say, at the distance of a mile, by the size of his great right arm, was the Saxon Englishman, and won the battles of England, while the Norman still sat on horseback and handled sword and spear. Nor shall we ask how bow and spear were ever struggling for the mastery, till they came into a union, even though Colonel Jacob revives the memory, and tells us that, "as with those bowmen at Homildon Hill and Flodden, even men naturally equal to ours would be absolutely powerless before skilful English soldiers so armed (with the rifle), and trained both to independent and combined action." Nor need we point out to the gallant Colonel that he should have taken Falkirk rather than Flodden, for it was there that the Chiltrons, with their eighteen feet long spears, were shot down where they stood by the English arrows; or how, at a later battle, not far from Stirling, all the chivalry of England surged uselessly against the spears, and the archers being by "Schyr Robert of Keyth stekand dispitously," and "scalyt ever ilk ane," the spear of defence routed, for the time, the bow of attack, and founded a long historic story, that finished at last "like the end of an old song." Into science or lore we enter not save cursorily—we wish to know what the rifle is in the present day, and what it can do. Colonel Jacob shall tell us.

To enable the uninitiated reader to understand the advance made by the rifle, in its recent form, over the old smooth bored musket, which was the ordinary weapon of our infantry down to the year 1852; and over the rifle, which was practically used in the service down to the same period, we may state broadly, that the fire of the musket was not usually considered of avail beyond the distance of 250 yards—or say, at the outside, 300 yards. Of course, the range or distance to which the ball could be driven was much greater, but the weapon failed in accuracy; no one could tell where the bullets would go to. Nor were the rifles very much better—as they were used. The two-grooved rifle in the service in 1852, called the Brunswick rifle, shot so inaccurately at 500 yards, that no angle of elevation could be assigned for that distance. The great fault in that case was in the shape of the bullet. With a properly shaped bullet, the same piece would certainly have ranged upwards of 1000 yards, with considerable accuracy. We must note, however, that the Brunswick rifle was far inferior in its design to the old poly-grooved pieces, constructed for an ordinary spherical ball, and answering their purpose remarkably well at the limited range that the spherical ball can attain. We need not pretend to determine the exact date of the recent improvements, because various claimants have asserted their priority; but it is tolerably certain, that down to a very recent period, 200 yards was esteemed the distance at which even an approach to accuracy could be obtained. Let us then contrast that statement with the following:—

"At a distance of 700 yards, on a windy day, an experiment, requiring forty-eight rounds to be fired from different barrels, set at different angles, was made, without a single shot missing the target."

This statement is from Colonel Gordon's account of the experiments made at Enfield in 1852, but it sinks into comparative insignificance when brought into the proximity of Colonel Jacob's doings in India.

"The 24-guage balls, of the increased length of two and a half and three diameters, proved admirably effective at ranges up to 2000 yards, which had never before been attained."—(*Rifle Practice*, p. 26.)

"A 32-guage ball, of three diameters in length, with thin iron point, is perfectly effective up to ranges of 2500 yards or more."—(P. 28.)

"Regular practice at a further range than 2000 yards, I have not tried; but from what I have seen of the effect at that distance, I am convinced that, with these balls which I am now using, a moderately light and perfectly handy rifle may be made to possess as much effectual power, at a distance of 3000 yards, as the old two-grooved rifle with the round ball, at 300."

It was in the year 1852 that the conclusive experiments carried on at Enfield, induced, or, it may almost be said, necessitated the introduction into the army of the government rifle, termed officially, the *new Enfield musket.* Previous to that time, the *Minié* bullet had been tried, with a certain amount of success. Its principle was to make the bullet expand by means of an iron cup, which was intended to be forced into the lead by the explosion of the powder. The object to be gained was to enable the soldier to load easily—the difficulty of forcing down the ball having been the practical objection to the rifle as previously employed. The iron cup, however, instead of being driven into the lead, was frequently driven through it—the iron cup was discharged, and the lead remained in the form of a ring in the barrel, rendering the piece more or less unserviceable. The principle was correct, but the mode of application was unsuccessful, and the iron cup disappeared from the service. The *Minié* rifle was the pattern of 1851, and the diameter of its ball, in decimals of an inch, was ·702. The *Enfield* rifle, which followed the Minié, originated in the experiments made at Enfield, where the government factory is situated. Some of the most eminent English gunmakers had been invited to send in such patterns of rifles as in their estimation would be found suitable for the military service of the country. The invitation on the part of the authorities appears to have been given in good faith, and with a candid desire, not only to discover the most serviceable weapon, but to do impartial justice to all parties forwarding their guns for trial or competition. The invitation, it must be confessed, was not met by the gunmaking community with the same spirit of candour. There were reservations, alterations, and a fear that their weaknesses might be discovered; some were too late, some appeared to have sent the wrong pieces or the wrong bullets, and, on the whole, the exhibition was not particularly creditable to the trade. Mr Wilkinson formed the exception. He sent in his articles, stood to his patterns, and, singularly enough, the recent tendency seems rather to approach the conclusions in which Mr Wilkinson differed from his fellow competitors. The gunmakers who forwarded rifles were, in addition to Mr Lovell, inspector of small arms—Mr Lancaster, Mr Purdey, Mr Westley Richards, Mr Wilkinson, and Mr Greener.

The regulation Minié was also brought into competition, and the Brunswick two-groove.

The specification of the guns was as follows, beginning with the largest bore :—

Guns.	Bore in decimals of an inch.	Spherical balls to 1 lb.	Number of grooves.	1 turn in feet.
Brunswick, or two groove, ...	704			2 f. 6 in.
Regn. Minié, ...	702			6 f. 6 in.
Purdey, ...	650	17		6 to 4.9
Lovell, ...	635	18		6 f. 6 in.
Greener, ...	621	19		
Richards, ...	577	24		
Lancaster, ...	540	30	ellipse	graduated.
Wilkinson, ...	530	31		6 f. 6in.

Many experiments were made with these muskets; and the mode of ascertaining their respective merits, was by firing at various distances a certain number of shots from each barrel when fixed in a frame, and set to an angle of elevation, and then firing twenty shots from the same barrel, when mounted in its stock, from the shoulder of a good marksman, who fired with a rest. Every care was taken with the mechanical adjustments to make the experiments as accurate as possible; and the experiments were on the whole highly satisfactory, with one exception. There appears to have been no intelligent apprehension that the shape of the bullet might be the most important element of the whole investigation. No principle appears to have presided over this part of the inquiry There was evidently no conception, either on the part of the gun-makers, or on the part of the officers, that the form of the projectile to be driven through the air was of incomparably more importance than the number of grooves by which the rotatory motion might happen to be communicated, or the greater or less calibre which might happen to be selected. The number of grooves, provided the rifle bullet be made to spin properly, is a matter of comparative indifference. It may be two, or it may be twenty, and the gun may shoot well in either case. And the size of the bore is a mere matter of convenience; the smallest bore being selected that is found fully efficient for ordinary military service. But the shape of the bullet is the one radical and essential consideration which surpasses all the others. It is the bullet that has to move through the air, the rifle being merely the implement for communicating the motion; and one of the most remarkable facts in the whole history of arms, is this very fact, that the shape of the bullet should have been neglected down to our own day. Even at Enfield, in 1852, there scarcely seems to have been even a gleam of suspicion that the form of the projectile must be suitable to the velocity with which it was to move, and the medium through which it was to be propelled. The very slow growth of an intelligent understanding of this point will ever remain a marvel in the history of the scientific art of gunnery. Neither officers, nor gun-makers, mathematicians, nor artillerymen, the sound practical men who trust unlimitedly to their own judgment, nor the theorists, who have an equal reliance on the infallibility of abstract truth—neither the one nor the other appear to have had the smallest real insight into the consideration which, next to that of making the rifle bullet *spin*, is virtually the crucial point of the whole matter. We shall endeavour to explain this, after describing the Enfield rifle.

After the experiments had been concluded—and out of the materials which had been furnished in the course of the experiments—two rifled muskets were made at the Royal manufactory at Enfield. The whole question of designing a pattern arm being a question of the compensation of advantages, and the adjustment of proportions and degrees, the authorities in the construction of the new muskets, endeavoured to assemble the most useful and most serviceable qualities according to the results that had been brought out in the course of the trials. They produced two muskets, not exactly similar to any that had been offered for trial, but combining, to the best of their judgment, the merits that had been made apparent. These muskets, up to 800 yards, shot better than any that had been tried. These were the new Enfield rifles, and their specification was as follows:—

Weight, with bayonet,	9 lbs. 3 oz.
Barrel, weight,	4 lbs. 2 oz.
„ length,	3 ft. 3 in.
Bore, cylindrical,	.577 in.
Grooves, three—one turn in,	6 ft. 6 in.
Charge—Powder, 2¼ drachms.	
Bullet, length,	.960 in.
„ diameter,	.568
„ weight, grains,	520

The bullet was madè with a cavity at the butt to make it expand, but without an iron cup; and for this bullet, the inventor, or presumed inventor, Mr Pritchett, received, if we mistake not, a gratuity of L.1000 from Government. Since then, however, a modification has taken place. It has been found that the capped bullets, when made small enough to load with sufficient ease for military purposes, do not expand with certainty; and, consequently, do not take hold of the rifling, in which case they are projected out of the barrel without the spinning motion, and tumble "head over heels." Instead of going straight forward—or as straight as the continued action of gravity would allow—they perform extraordinary curvatures in the air, and are not particularly safe when they go astray. To remedy this defect, a plug of hard wood has been introduced into the cavity, and it seems to answer its purpose tolerably well. Such is the rifle now employed in the service, called the Enfield Rifle, or pattern of 1853; and of this pattern, 272,000 were supplied by the private gun trade of the country, down to March 1857.

For the manufacture of this gun by machinery, so as to make the various parts of the gun interchange and fit each other universally, the Enfield Factory has received a number of ingenious machines from America; but no machine-made gun had been produced till after the Crimean War; and the Birmingham makers are of opinion, that it is not bedded together with the same solidity as the Birmingham made gun, and that it will not stand the same length of wear. From the inspection both of the machines and of the work produced by them, we should imagine that there cannot be the slightest doubt as to the ultimate success of the Enfield system; and the best evidence of the prospective triumph of machinery, is the fact that private makers—the London Armoury Company for instance—have already supplied themselves with similar machines from America, for the purpose of executing their contract with Government, for the supply of 30,000 rifles of the Enfield pattern.

The Enfield Rifle, then, represents a long thin tube, with a slow pitch of rifling, and a bullet consisting of a cupped cylinder with a rounded end. It performs well up to 800 yards, and as a half pike, there can be no doubt of its unquestionable excellence. The steel bayonets, as now manufactured, have not only never had an equal, but have never had anything in the shape of a rival that could approach them. They appear to be as nearly perfect, both in quality and finish, as anything of the kind can possibly be. As a whole, we need not hesitate to repeat, that no such weapon was ever before placed in the hand of the soldier.

But Colonel Jacob can beat the Enfield rifle in shooting; and it will become a question whether some new modification will not be requisite in the national arm. If the Enfield rifle can only perform well, as to accuracy, up to 800 yards; and if Colonel Jacob has "prepared a pattern-rifle for the army far more handy and convenient in every way, than the rifles hitherto in use of 32-gauge bore, only with which a tolerably good shot *can certainly strike an object the size of a man, once out of three times, at a thousand yards distance*, and of which the full effective range is above 2000 yards—the ball at that range still flying with deadly velocity," it stands to reason, that our troops would have as poor a chance with a foreign enemy, armed with the Jacob rifle, as our cruisers, armed with carronades had with the American ships, armed with the long 32's. Troops armed with the old musket, would be immolated in the presence of the Enfield rifle; but if the Enfield rifle can be itself surpassed almost as much as it surpassed the musket, it would be satisfactory to know that Great Britain was the first to take advantage of the discovery.

Before adverting to the performances of Colonel Jacob, we may state concisely what we conceive to be the essence of the whole of the modern improvements in the rifle.

To project a round or spherical ball through the air is very much the same as to sail a washing tub through the water. The problem of constructing a bullet is, in fact, very similar to that of constructing a ship or a boat. For the smooth bored gun the round bullet was naturally adopted, both on account of its convenience in loading, and because it has not been found that other forms can be projected from the smooth bored gun with greater advantage than the sphere. We do not affirm that a form of projectile may not yet be discovered, that shall shoot better than the ordinary round ball "or sphere" from a smooth barrel. We merely on this occasion advert to the fact, that the round bullet was used universally with the smooth bore, and naturally enough was used also with the rifles. But to project a sphere through the air is much the same as to sail a round tub through the water. Improvement in rifle practice, therefore, must depend in suiting the form of the bullet to the requirements of its intended flight; and the problem is much the same as that of building a clipper ship, supposing that we were to start from the washing tub. The Pritchett bullet or Enfield bullet represents a trough with a rounded end, and of course a trough with a rounded end is superior to a tub. The flight of the Enfield bullet depends upon its form, and not upon any principle of expansion produced by a cup, to be acted upon by an iron capsule, or by the force of the powder alone, or by a plug of boxwood. And this assertion can be proven in this way—let a bullet of the same shape be cast with flanges, so as to lay hold of the rifling, and it will still fly as well as before, provided its fittings be air tight. But it is quite evident that a trough with a rounded end is not the best form for making its way either through the water or the air. The shipbuilder, looking at the elegant curves of his own beautiful water line, would stand aghast at the section of even the Enfield bullet, and would reckon it as no great advance upon the washing tub. Colonel Jacob comes in with a modification in the right direction, and puts a sharp bow on the ball, which he makes two diameters or two and a half diameters long, but leaving the butt or stern of the ball flat, and this flat tendency appears to be the prevailing fashion of the present time, apparently on the supposition that the powder hits a flat ended ball harder than one that should be finished with a graceful curve like the *run* of a ship. But Colonel Jacob's bullet that has a bow is an approach to the truth, and of course it flies both further and more accurately than the round ended trough. The next improvement is to put a proper stern on the bullet, so as to deliver the air round a proper and becoming curve instead of at a sharp edge; and then the bullet, with a little modification of its whole curvature, will be as nearly perfect for flight through the air as a clipper ship is for passage through the water. The advantage of the flat end or square stern is, we apprehend, purely chimerical; because the powder strikes the bullet like a punch, and a punch fitting a cone will strike the point of the cone as hard as a flat punch would strike the base of the same cone. Progress is the law of the rifle bullet, and sooner or later it will come to the elegant curves of the ship, otherwise it will not fly so far as it might do. The designer of a rifle ball might study with advantage the process of draughting a ship's lines.

The modern improvements in the rifle then, resolve themselves into the improvement in the shape of the bullet, by which it is adapted for flight through the air, and into the use of a bullet that can be easily loaded, but which expands under the action of the powder either—first, by the use of a cupped butt; or, second, by the use of one or more rings, which enable the after part of the bullet to jam up and lay hold of the rifling. With a long bullet we have little doubt that the lead will jam up even without rings, if the bullet be made sufficiently near the size of the bore to fit properly with a greased patch. The lead is easily compressible, and a much smaller amount of hold than is usually supposed enables it to take the rifling. The phenomena called *stripping* is, we apprehend, one which most riflemen may have heard of, but none can say that they have observed. It is a myth.

Colonel Jacob's improvement, then, consist, in the first place, in giving a better form to the bullet, by which the resistance is diminished and the range increased. To fire this bullet he uses a shorter, heavier barrel, with a more rapid twist and a smaller bore; and in these particulars we entirely concur with him. Even during the Enfield experiments it was found that a barrel thirty inches long afforded the best shooting that was then obtained, but the extra length was considered requisite for a military weapon,—for the half-pike service.

But the improvement in the form of the bullet is not Colonel Jacob's only claim to be ranked as the first experimental rifleman of the day. He has constructed and applied to the rifle bullet, a small shell, consisting of a copper tube filled with gunpowder, and primed with detonating powder. The shells are made of various sizes, and are now supplied by the gun trade. The bullet is cast upon a cone, which leaves a cavity into which the shell can be placed without difficulty. The point of the shell is of course in front, and the moment the bullet strikes, the shell explodes, and does damage proportioned to its size and the nature of the surrounding materials. These shells, for military purposes, appear to be the most formidable adjuncts that have yet been applied to the rifle; and it may safely be presumed, that they would render the fire of a body of men wonderfully effective where the ammunition waggons of an enemy could be approached. We shall state what Colonel Jacob has been able to do with them. At Kurrachee, on the 23d August 1856, an ammunition waggon was constructed out of an old country cart, with a box on it, about the size of a pair of the ordinary ammunition boxes in use with a field battery. The box was four feet long and two feet high on the side next the riflemen, which was one inch and a half thick; the lid and the other sides being an inch thick. The box was filled with damaged gunpowder, in cotton bags, each containing 2 lbs.—the whole charge being about 100 lbs. The box was properly secured, and a tarpaulin nailed over it. The cart was placed at the foot of the shooting butt, 1200 yards from the shooters, who, on this occasion, were Mr Gibb, C. S., Captain Gibbard of the Artillery, Colonel Jacob, and Captain Scott of the Lancers. The morning was cloudy, and the cart not very distinctly visible. About twenty shells in all had been fired without exploding the powder, when the ninth shell from Mr Gibb's rifle (32 gauge only) "struck the box and exploded the powder, with the most brilliant effect." Some of the officers, however, still entertained the opinion that the manner in which the shot and cartridges are packed in the artillery ammunition waggons would prevent the possibility of the rifle shells reaching the powder, even if they burst among the shot in the boxes. To test this opinion another waggon was prepared, with four boxes on it, similar to those of an ammunition waggon in a field battery. These boxes were packed with round shot, cartridges, etc., like those of a regular field battery, and the proceedings were resumed on the 25th August, at the same distance of 1200 yards. The seventh shell from Captain Gibbard's rifle exploded one of the four ammunition boxes. The fifth shell from Colonel Jacob's rifle entered another box, and a second explosion took place. The gentlemen present proceeded to the butt to examine the effect, and found the waggon burning, although two of the boxes were still unexploded. The neighbourhood being dangerous the spectators retired, and the third box exploded. The fourth was blown up by another shell, and the waggon was totally destroyed.

But Colonel Jacob's practice was not limited even to the range of 1200 yards, as will be seen by the following memorandum, which we quote entire, believing it to be the record of the most notable feat ever performed with so small a weapon as a shoulder rifle :—

"RIFLE PRACTICE AT KURRACHEE.

"*Friday, 5th Sept.* 1856.

"A powder box was prepared for explosion, by rifle shells, at a range of (1800) one thousand eight hundred yards. The box consisted of two boards, one and a quarter inches thick, and ten feet square, put together with a space of one inch between their surfaces; this space was filled with gunpowder, and was found to contain a charge of above 500 lbs. The box was placed against the butt on the ground, and after being loaded was well tarred over. At 7 A.M. on the 5th September 1856, rifle practice was commenced with shells at this box, from a distance of 1800 yards. The morning at first was dark and cloudy, but after a few shots had been fired the weather improved, and soon became favourable as regards light, although a fresh breeze was blowing across the range from right to left. The shooters were :

Captain Gibbard, Artillery .	24-gauge Rifle
Captain Thatcher . . .	16-gauge Manton
Colonel Jacob . . .	24-gauge Manton
Captain Scott, A.D.C. . .	32-gauge Manton

The undermentioned gentlemen were also present:—

Colonel Trevelyan, Artillery; Lieutenant De Nitre, Artillery; Captain Pirie, Lieutenant of Police.

For the first few rounds the shells struck near the foot of the butt, but as the morning brightened the practice improved, and many shells in succession struck close over and around the box—so close, indeed, that to the naked eye they appeared actually to strike it. The practice was steadily and deliberately continued, but the powder still remained untouched, till Colonel Jacob's little double rifle had been fired twenty times. The last four shots from this rifle were all very near to the box; and when fired for the twenty-first time, the shell from the second barrel struck the box and exploded the powder. The effect was magnificent, the distance being so great, and the charge in the box so heavy. So violent was the explosion, that it was thought at first that the butt wall had been blown down; but when the smoke cleared, the wall was seen standing uninjured. This wall is built of stone, ten feet thick at the base, and one and a half at top, is one hundred feet long and fifty feet high. A large portion of surface near the powder-box was a good deal shattered, but the damage was only superficial, and the butt was not seriously injured. Throughout the practice at Kurrachee no rest of any kind was used. The rifles were always fired from the shoulder, the shooter standing up."

With regard to the penetration of the bullets used by Colonel Jacob, we may take the following instances:—At Kurrachee, on the 26th September 1856, a 24-gauge iron-pointed ball, fired with a charge of 2½ drachms of powder, at a distance of twenty-five yards, penetrated clean through eighteen deal planks, each three-quarters of an inch thick, and smashed itself all to pieces against stones on the other side. And, on the 29th September 1856, "a 24-gauge iron-pointed bullet, with a charge of 2½ drachms of powder was fired at twenty-five deal boards, each a little more than three-quarters of an inch thick—the whole thickness of all the boards being twenty inches. The boards were packed close one behind the other, and wedged fast into a box. The rifle was fired at twenty-five yards distance. The bullet penetrated clean through the whole twenty-five planks, and buried itself its whole length in a block of hard wood, two and a half inches thick, which was behind the mass of boards, breaking this block into two pieces.

Colonel Jacob objects to a long thin barrel for a rifle, which he admits, however, may perform well up to 800 yards, with an expanding ball and a slow burning powder. He prefers a short barrel with a rapid twist. In this there is nothing new. The German rifles that have been in use for the last hundred years would nearly fulfil the conditions laid down; and plenty of rifles were made in England before the name of Minié was heard of, quite near enough to Colonel Jacob's specification to perform well if fitted with the appropriate bullet. The mystery is not in the rifling, but in the shape of the projectile. "For my projectiles, therefore," says Colonel Jacob, "we require a short barrel with deep grooves and great twist. If we attempt to use these projectiles with a long thin barrel, like the Enfield, they must fail signally. The weight of the ball, and its solid resistance, are too great for the weaker barrel, which trembles, shakes, and vibrates when fired to a degree which shows it to be altogether overstrained; in fact, the iron of the barrel must be distorted into a series of waves, as the ball passes along it, and the elastic action of so thin a tube near the muzzle end, must make it jerk the ball about in a wonderful manner as it leaves it." Colonel Jacob has here adverted to an important principle, which may account for the unexplained fact, that while shot barrels are almost invariably made round, rifle barrels have almost as invariably been made eight-sided; the angles on the barrel being calculated to arrest the undulation. The same circumstance may also give a clue to the fact, that the *double rifle* was found preferable to the single. The single barrel must be made stout, so as to control the expansion and vibration; but the double barrel effects this by means of joining two tubes together. The waves cannot be generated to the same extent, when one side of the barrel that is undergoing expansion under the force of the powder is held firm by another piece of metal which is not undergoing a similar expansion. It is quite in accordance with sound theory, therefore, that the double gun may actually be found to perform better than a single—taking the weight into due consideration. With regard to size, Colonel Jacob considers a 32-guage to be large enough for anything, and twenty-four inches to be long enough for the barrel of any calibre whatever. The grooves, he says, should be full, deep, of breadth equal to that of the lands, and may turn once in three feet of length. Such are Colonel Jacob's conclusions, based upon experience, second to that of no living man; and though we should beg leave to differ from the general affirmation, that 24 inches would be found long enough for *any* barrel, we willingly admit that Colonel Jacob's view is substantially the correct one.

In conclusion, we shall not presume to recommend the perusal of this extraordinary pamphlet, inasmuch as no one who has not perused it, or who has not conducted a somewhat similar course of experiments, can be said to have any just conception of the real capabilities of the rifle. Nor shall we congratulate Colonel Jacob on having brought to such successful issue, what we venture to characterise as the most important set of experiments ever made with fire-arms by a single individual. Colonel Jacob has gone far to alter the very nature of the art of war. His shell—almost an ingenious curiosity when first inspected—contains within it a power which, hereafter, in the field or on the waves, will, we fully anticipate, make the name of the inventor memorable. This fact cannot be overturned—the Jacob shell, at the distance of a mile, can from an ordinary shoulder rifle blow up an ammunition waggon. That single fact contains the elements of prodigious advance. But whatever the effect in the field—on cavalry by day, or even more important still, by night, when the horses could be stampeded—on ammunition waggons—on batteries—on invested fortresses, or towns—it is at sea that we expect the powers of the Jacob shell to produce the most important results. One of these shells passing into a powder-bucket might determine the fate of a line-of-battle-ship; and what is more, sea-ports and dock-yards that could not be approached with heavy siege artillery, might possibly be approached by these tiny shells, every one of which contains within itself the capability of exploding a magazine or setting fire to an arsenal. The experiments of Mr Whitworth, though not without a certain value, sink into insignificance before the long series of successes which have attended the intelligent and persevering efforts of Colonel Jacob of the Bombay Artillery, now, we are happy to observe, Brigadier-General Jacob, C.B.

ART. X.—*The Angel in the House.* By COVENTRY PATMORE. Books I. and II. Second Edition. J. W. Parker. 1858. *Tamerton Church Tower, and other Poems.* By COVENTRY PATMORE. J. W. Parker. 1854.

ALL the poetry most characteristic of the present century has in it a kind of microscopic air. It concentrates the eye on what is near, rather than on what is distant; it bids us see a new world in every fresh point of space, instead of making us feel that every point is a fresh position from which to sweep with new result the broad horizon of the universe. And, as the magnifying glass is necessarily of a short focus, and throws into dimness and mist all that lies beyond its proper range, and that, too, by the very same property by which it reveals in full the marvellous complexity of the smallest point within that range, so it seems that it is the condition of the poetic faculty of modern times, to give us extraordinary insight into what is near and apparently insignificant, at the expense of those flowing outlines and comprehensive groupings of human life which the poets of older days painted for us. The mind, like the eye, may be adapted to a near or a distant range of observation; but, once adapted, it is not easy to alter it; and so, too, the mind that has been engaged in observing *itself*, cannot be easily accustomed to include a wide field of view. And there is an obvious reason for this, beyond the mere illustrative analogy we have hitherto used in explaining our meaning; for, though every poet, whether of microscopic or telescopic vision, must necessarily have experience in order to sing, and can only use his own experience in his song, that experience is very different in kind, and is used after a very different fashion by the great painters of life and human story, such as Homer, Chaucer, Tasso, and Milton, to that in which personal experience is used by the great modern school of poets—Goethe and Coleridge, Wordsworth and Tennyson. The former do not, like the latter, gaze into their own experience *first*, and then slowly interpret by it the signs and symptoms of external life. Their imagination is quickened from without, not from within. They do not see (simply because they never study) all those minute ripples of thought and feeling which bear no visible trace upon the broad field of human life and history. They see the deeper breadths of shadow and of light; they see the masses of colour which distinguish the various groups of men, and the striking aspects of nature; but the smaller elements of which these are composed they know only roughly, and from an instinctive knowledge of proportion. Just as a quick ear will catch a tune though it could never distinguish the separate notes, they see and know the whole before they know the parts. The great epic poets could not have painted for us what they have painted at all, had not the rhythm of some great passage of human life caught their imagination *before* they had gained any insight into the detailed elements of which it was composed; and, of course, they sing with less of inward detail and more of broad effect than the modern poets, because the *unit* of conception with them is far larger than it can be with the self-conscious singers of our own times. If you gaze on the external world without the preparation of self-study, you cannot possibly see all that you see if you have first studied the deep details of your inward life; but you will partially understand and grasp a much wider if a much less complex world. A mind that comes, like Goethe's, to its study of society with an imagination already burdened with the richest abundance of inward experience, will see more than it can delineate with any artistic effect in its pictures. A self-conscious imagination is a microscope that enlarges indefinitely the details of every atom it beholds, and so leads to a pre-Raffaelite kind of poetry, which distracts attention from the grouping and the outline by the unnatural distinctness of every turn of feeling and every shade of thought. The consequence is, that poetry is taking more and more minute fields of delineation every day. A single daisy, a group of daffodils, or at most a mountain, a child, or a woman, is almost as much as Wordsworth can endure to deal with as the subject of any one of his finest poems. Goethe is greatest in delineating a few female characters; and Tennyson most perfect in his mood of sadness, as it expresses itself in half-despondent self-questionings, or in melancholy song. Since Scott ceased to write, we have had no poet whose imagination was kindled by the outward world, by groups of noble figures, and the drama of event. All our recent poets bring to their work the microscope of self-conscious experience; and so, unless they wisely limit themselves to comparatively minute themes, they are compelled either to execute some parts with disproportionate accuracy, or to crowd their canvas with distracting detail. Goethe's tales are frequently failures, simply because he kept but one figure under his object-glass at a time, instead of the whole action of the tale.

But though the modern poetry is minute and microscopic, it is anything but close and confined. The single point it selects for its magnifying glass, is not only shown to be a thousand-fold fuller of action and feeling than it was known to be before, but is connected on every side with the world around it, and the infinite life beyond. Even Wordsworth's daisy or his daffodils are instantly seen, not merely to be springing from the common earth, but to be over-arched by the eternal heavens;—they teach human lessons "of all degrees," and the spiritual microscope is never lifted away till they have yielded fresh symbols of the immortality of man, and fresh tokens of the tender mercy of God. The infinitude of life is perhaps felt more deeply in the poems of the modern self-conscious school than in any other. They have not generally the sunny warmth and glow of stories which paint for us the whole "wonder and bloom of the world;" they have almost always something of the awe of a world of mysterious shadow in them; for, while they take a very narrow foreground, they always show you the infinite distances into which that foreground stretches away on every side. And it is clear that indications of this mysterious infinitude can be given more easily and adequately in a poem on a small theme, than in a poem on a large theme. A solitary flower may be made the means of expressing the infinite awe of the universe far more effectively than the most crowded drama. The fuller a picture or a poem is of positive life action and feeling, the less room is there left in our finite minds for the strange, unconceived immensity beyond. Rembrandt fills us with deeper sense of the supernatural world by his rough sketch of Jacob's sleeping form, and the dark ladder lit up by one or two flitting shapes of light, than does all the crowded field of Michael Angelo's last judgment. And thus the modern school of minutely penetrating, self-conscious experience, unveils the spiritual world far more effectually—though, of course, only at single points—than the great epic and dramatic poets. Tennyson brings us oftener and far more closely and personally face to face with God, and sin, and immortal life, than Milton—though God and sin are the professed subjects of Milton's grand poem, and only the occasional visions of Tennyson's poetic world.

Mr Coventry Patmore certainly belongs to the modern school of poetry—the self-conscious or microscopic school, as we have termed it; but in many respects he differs remarkably from the other members of it. The single topic on which he may happen at any time to dwell, is magnified in the same careful way, and enlarged in all its details, by the interpreting light of a self-contemplating experience. We see many emotions, and learn to distinguish many shades of emotion which we had never noted before; and the emotion is not merely delineated—it also throws off prismatic fringes of thought, as happens so commonly in the finer poems of Tennyson. But yet Mr Patmore has a manner, and merits, and deficiencies of his own, which distinguish him strongly from his contemporaries. It is obvious at once that his favourite study is what we may call the *surface* of man's deeper life,—that stratum of human existence where character passes into *manners.* He seldom or never probes the depths of the individual soul. He has no bias to investigate the *springs* of thought and faith. These he accepts; and he only begins to watch them keenly where they begin to blend with the influences which man exerts over man. He skims, as it were, the fine superficies of nature and humanity, but seldom cares to penetrate to those deeper and sterner social laws on which are based the fair "traditions of civility," which he sings with so much grace. He has himself told us, in some of his finest lines, that sustained spiritual effort is not a theme on which his genius loves to dwell—

"And to converse direct with Heaven,
Is a great labour in the breast;"

nor does he choose even to "converse direct" with man. What Mr Carlyle calls a "clothes-philosophy" is nearest to Mr Patmore's characteristic domain,—meaning, of course, by clothes, that spiritual vesture of the mind in which it appears—in all "seasons of calm weather" at least—to the eyes of spectators. He does not love to look through and beneath this to what the spirit is in itself—to the unclothed spirit as it is seen by God, or even as it is seen by men in the lightening gleams of tempestuous trial, and in moments when love or faith temporarily dissolves the close-fitting shell of social forms. Though Mr Patmore's special theme is love, it is not love in its deeper moods, but in its gentler courtesies;—it is "love ceremonious," love "the nursling of civility," not love in the mood in which it melts the "binding crust of years," and reveals the hidden depths of personal life to the gaze of another. The following graceful lines are not by any means specimens of Mr Patmore's best poetry, but they exemplify exactly the sphere he chooses for himself in his poem on love:—

"Let love make home a gracious court;
There let the world's rude hasty ways
Be fashioned to a loftier port,
And learn to bow and stand at gaze;
And let the sweet respective sphere
Of personal worship there obtain
Circumference for moving clear,
None treading on another's train.
This makes that pleasures do not cloy,
And dignifies our mortal strife
With calmness and considerate joy,
Befitting our immortal life."

Not only the spasmodic school, but almost all the modern poets—no doubt herein exaggerating greatly the passionate and absorbing side of love—would call Mr Patmore's poem no poem on love at all. They would find no poetry in a love that "learned to bow and stand at gaze;" they would have no idea that love ought to recognise the "sweet respective sphere of personal worship;" and though we completely appreciate both Mr Patmore's meaning and the grace of his delineation, we draw attention to this contrast, simply in order to point out that he advisedly chooses, for the circle of thought and emotion in which he moves, one much more distant from the personal centre of human life than modern poets usually do. Indeed, this is not only his habit, but his professed desire. He does not write to unveil life,—he writes to exercise "the poet's gift of *perfect speech*" on that which is within most men's ken.

> "Nor voice, nor art, nor plot, nor plan,
> Nor aught of mine here's worth a toy;
> Quit praise and blame, and, if you can,
> Do, brother, for the nonce enjoy.
> Moving but as the feelings move,
> I run, or loiter with delight,
> Or stop to mark where gentle Love
> Persuades the soul from height to height."

And though he disowns expressly any wish to devote his song to mere temporary and transient beauty,—though he says,

> "My faith is fast,
> That all the loveliness I sing
> Is made to bear the mortal blast,
> And blossom in a better spring;"—

yet in this, too, he is quite consistent with himself, for even spiritual and immortal attributes have not only their unfathomable depths, but their shining surface,—not only their hidden subterranean spring, but their visible undulating course,—not only their pools of mystery, but their sunny social courses; and the poet may choose the latter, and yet keep as truly to an "immortal" theme,—as if, like Wordsworth, he gave us glimpses of the well-springs of the creative beauty, or, like Tennyson, he probed awfully, and yet reverently, the secret roots of human faith.

This upper stratum, then, of human life, when character assumes the vesture of what we call *manners*, is Mr Patmore's peculiar sphere as a poet; and it has, of course, both its advantageous and its defective side. On the one hand, it gives more play, more widely-spreading colour to his theme, than, as one of the microscopic school, he could otherwise, if he pierced deeper, hope to attain; on the other hand, it opens out fewer of those vistas of infinite depth and wonder which an insight into the deeper springs of thought and love always command. His theme is less circumscribed than it otherwise would be, but it has fewer glimpses of the central and primal life. Interpreting life as he does by his own self-conscious experience, it would follow, that if he took a more searching phase of that experience for what we have called his "unit of conception," he could not have had so extended a field. As it is, the thread of his poem winds through many light and gay scenes which would have marred the unity of any deeper theme. At the same time, of course, to go back to an old analogy, the magnifying-glass that admits a larger object at one view must have a longer focal length and a weaker power. In other words, the self-conscious thought which plays over the whole upper surface of a man's spiritual life, instead of piercing into its deepest roots and springs, will miss many openings into that eternal truth of life which a more concentrated power would have detected and explored. Mr Patmore has said to himself, "Lift not the painted veil which those who live call life;" nay, he has said more, and will not even consent to remove the veil of social observances; and his reward is, that, though a self-conscious poet, he has got a wider and more gently undulating foreground for his poem than most of his contemporaries.

And first, his gift as a painter of nature is not slight, but it is limited by the considerations we have advanced with regard to his general sphere as an artist. He cannot realise his most transient emotions in an imagined landscape of natural beauty that completely expresses a phase of human feeling, like Tennyson. He cannot distil the realities of nature till they enter into his mind, and spiritualise his own moods, like Wordsworth; but he can take off a very true and lovely picture of what he has seen or conceived, so that we seem to smell the very flowers, and breathe the very breeze of which he sings. Thus he tells us:—

"I, in whom the sweet time wrought,
  Lay stretched within a lonely glade,
Abandoned to delicious thought,
  Beneath the softly twinkling shade.
The leaves, all stirring, mimick'd well
  A neighbouring rush of rivers cold,
And, as the sun or shadow fell,
  So these were green, and those were gold;
In dim recesses hyacinths drooped,
  And breadths of primrose cooled the air,
Which, wandering through the woodland, stooped,
  And gathered perfumes here and there;
Upon the spray the squirrel swung,
  And careless songsters, six or seven,
Sung lofty songs the leaves among,
  Fit for their only listener, Heaven."

An equally poetical picture is the description of the Deanery of Sarum Close, where the scene of the poem is most often laid:—

"'Twas half my home six years ago;
The six years had not altered it:
Red brick and ashlar, long and low,
With dormers and with oriels lit.
Geranium, lychnis, rose arrayed,
The windows all wide-open thrown,
And some one in the study played
The wedding-march of Mendelssohn.
And there it was I last took leave:
'Twas Christmas: I remember'd now
The cruel girls, who feigned to grieve,
Took down the evergreens, and how
The laurel into blazes woke
The fire, lighting the large, low room,
A dim rich lustre of old oak
And crimson velvet's glowing gloom."

These, and other still more delicately painted pictures, have all the life and harmony that only a poet can give. We do not say that they belong to the *highest* poetic class, for they do not profess to interpret, even so far as interpretation is possible, the tender and mystic symbols of natural beauty. Mr Patmore contents himself with simple delineation; he neither constrains the manners of men to yield up the inner secrets of their characters, nor the complex forms of nature to reveal the deeper things of the Eternal Mind.

But we cannot look to have the same fountain of thought for all our poets; and if the "power of hills" rests upon some of them, till it gives to all they utter the might and freedom of a "mountain tone,"—if

"Blank misgivings of a creature
Moving about in worlds not realised"

inspire others with a special art for translating into human speech the sweet and melancholy music of the air and sea,—not the less but the more grateful shall we be to receive from a poet of a different class those soft transcripts of nature, which are rather a fitting framework for human experience than a new enlargement of its sphere. This distinctly secondary place Nature certainly takes in Mr Patmore's poems. His images taken from Nature usually come in the distinct form of similes—similes often of the most perfect grace and beauty,—but still *illustrations* of thought rather than its very form and body. The matured stage of exact analogy which the simile implies, points out at once that the thought came first, the illustration following; in short, that there was not that perfect fusion between the mental conception and the image which embodies it, which is given by the activity of the imagination in its most vivid moments. A new and perfect simile always implies a more considerate and slower fancy than a new and perfect metaphor. Thus, where Mr Patmore is describing the polite jealousy entertained by his hero for another young gentleman (who seems, by the way, to have been more deserving but less successful in his suit), he sings:—

> "A man to please a girl! though I
> Retorting his forced smiles, the shrouds
> Of wrath, so hid as she was by,
> *Sweet moon between her lighted clouds!*"

Again, when he is recalling the "noble form and gentle state" of the lady he admires, he explains:—

> "Her dress had brushed this wicket; here
> She turned her face and laugh'd, with looks
> *Like moonbeams on a wavering mere.*"

There is genuine poetry in these touches, but clearly the nature is strictly subordinated to the human thought; it does not blend with it, but rather clothes it; there is not that perfect identity between the thought and the symbol which seems to deepen at the same time that it embodies the feeling of the poet. Nor can we look for the very highest poetry, even of *Nature*, from any poet who does not work on what we may call the primary strata of human life—the rugged affections, passions, and faiths which lie even deeper in our nature than

> "The fair sum of six thousand years'
> Traditions of civility,"

of which Mr Patmore so much loves to sing. There is something so awful, at times even appalling, about the mighty symbols and mysterious constancy of Nature's life, that it will not amalgamate entirely with any but the very deepest element in man's. The highest poetry of Nature is not Greek but Hebrew. The "mountains and the strong foundations of the earth" will give ear only to the "Lord's controversy." And, among English poets, Nature's life has been the natural embodiment of human thought only where that thought has been quarried out of the substantial essence of our universal humanity. This cannot truly be said of any poet who draws so largely on the graces of social culture, and even of national manners and habits, as Mr Patmore. He sings of pleasant ramblings in a fair and well-tilled garden, not of wanderings on that primeval earth of forest and wilderness where man first learns to subdue Nature, and, by subduing, to respect and dimly understand her.

And this leads us to the qualifications of Mr Patmore's genius for painting character. He has one of the most distinguishing characteristics of a poet, an instinctive knowledge of the feminine cast of mind. His special insight into the emotional upper-currents of human experience, of which we have spoken, necessarily implies insight into feminine characteristics: for women *express* their whole mind through their manners far more constantly and adequately (though generally less openly) than men. It might almost be said to be a certain test, though by no means a necessary condition, of poetic genius, for a man to have the power of delineating perfectly feminine influences, and feminine modes of thought. Mr Kingsley has it. We do not know one of his masculine characters that is painted to the life, but many of his feminine characters breathe out the very essence of what Goethe used to call women's "reine Weiblichkeit und holde Umgebung." Many poets of all but the very first rank are without it; but no man who has it can help being in some degree a poet; for it implies, at least in a *man*, an imagination so receptive, so open to the most delicate impressions, in order to be able to delineate the ethereal essence of feminine influence, that other forms of life and beauty must necessarily enter at the same avenues. No man who can delineate women, can be without power to delineate also the fairer and softer aspects of nature, though he need not, of course, be able to grasp her more rugged and magnificent scenes. Mr Patmore has the power we have indicated in a very remarkable degree. His only fault is, if we may so express it, that he has a tendency, not to make women *too* feminine, which is impossible, but a little too small. Now, we cannot deny the very obvious fact of a certain limitation of mind—let us say shallowness—in a large proportion of women: but assuredly it is not the feminine cast of their character which makes them so. This Mr Patmore well knows, and on occasion can finely sing. Speaking of the nature of woman, he says, with wonderful beauty,

> "No idle thought her instinct shrouds,
> But fancy chequers settled sense,
> Like alteration of the clouds
> On noon-day's azure permanence."

But in his actual delineations he does not usually give us that "noon-day's azure permanence," but only a very limited sample of it, without indicating, as he should do, the soft breadths of sky which stretch far beyond the limits of his picture. This often destroys the beauty of his delineation, which is occasionally young-ladyish rather than feminine, and at such times loses sight of the deeper aspects of women's devotion. This is a fault Mr Kingsley always avoids; the great beauty of his feminine characters lies in the marvellous depth he ever gives them;

> "Rest comes down upon their souls
> From the everlasting deep."

We do not mean that Mr Patmore does not also, at times, give us fine glimpses of this. We have shown that he does. Not in vain does he ask, at the opening of his poem—

> "Thou Primal Love, who grantest wings
> And voices to the woodland birds,
> Grant me the power of saying things
> Too simple and too sweet for words."

But still the main fault of his poem is, that he makes his heroine a toy. We must confess at once that we think poorly of Honoria. We should object to her for a wife. She is prudish, and her nature is on a petty scale. She is worthy of the hero, but that is not saying very much for her. She is very inferior to her sisters, so far as we can catch glimpses of them in the sketch. The second daughter is much the best; and even Mildred, the youngest, "whose daisy eyes had learned to droop," is very much to be preferred to the eldest. We are told at first almost as much about Honoria as it was possible to tell; and here is the young lady with whom we are so ill-satisfied:—

> "Was this her eldest, Honor; prude,
> Who would not let me pull the swing;
> Who, kissed at Christmas, called me rude,
> And sobbed alone, and would not sing?
> How changed! In shape, no tall, slim Grace,
> But Venus; milder than the dove;
> Her mother's air; her Norman face,
> Her large, sweet eyes, clear lakes of love."

The picture is pretty and true to nature, and is adhered to throughout; but it is not a picture fitted to bring out the poetic or deep side of love. We have many complaints to make of the pettiness of the character. She does not *talk* with her lover, she *chats*. She is dignified on a small scale. When her hand is pressed, she "withdraws the rays"

> "Which did till then enhance
> Her fairness with its thanks for praise."

After marriage, she objects to her husband's song—what would certainly be no credit to her if true—

> "I did not call you 'Dear' or 'Love,'
> I think, till after Frank was born."

In short, she is altogether limited.

It is quite a relief, in the middle of this very "proper" love-making, to come across some of the things "too simple and too sweet for words," which are interspersed in the pauses of the courtship. You can scarcely believe sometimes, while Mr Patmore dwells on the small accustomed agonies of love, and explains, with touching fidelity to the immemorial traditions of his subject, how pearls and lapis lazuli, and so forth, are "her beauty's fair prerogative,"—that he can write with so much breadth and depth as is shown, not only in special parts of his book, but at frequent intervals throughout it. The music of the following verses, for example, is not easily forgotten; meaning and form take hold of the mind with equal force, and the last two lines sum up the thought with that significant indication of an untold depth of feeling beyond, which we miss in the numerous sweet, easy, and flowing verses, of the kind we have just been criticising:—

> "Love wakes men, once a life-time each;
> They lift their heavy lids and look;
> And lo! what one sweet page can teach
> They read with joy, then shut the book.
> And some give thanks, and some blaspheme,
> And most forget; but either way,
> *That and the Child's unheeded dream*
> *Is all the light of all their day.*"

While we are on the subject of Mr Patmore's treatment of character, we must note that his incidental sketches are truer, and even more skilful, than his principal figures. The Dean himself is finely described; and we very much prefer a strong-minded old aunt, who appears once or twice on the scene, to the heroine herself. She is sketched with force and humour, and gives an exceedingly good and trustworthy opinion on the hero of the poem, though she is clearly too partial to the heroine. We feel a great admiration for this old lady, who would certainly have forbidden the banns if she could, and who yet with noble forgiveness of temper presented her niece with a "lovely shawl" as a wedding present, when she found that she could find no "lawful impediment!" We recommend her heartily to the notice of our readers.

The one great reason why Mr Patmore's poem does not take a wider and deeper range is to be found in his too direct mode of delineating the passion which is the subject of his poem. The natural and highest tendency of that passion is certainly not to set up an idol directly before our eyes, and magnify it after the minute and somewhat heathen tone of adulation into which this poem not unfrequently falls—though it as frequently rises far above it. "Love," said a great thinker, "is deepest in those minds in which it is not a primary but a secondary passion." We believe this to be a very deep truth as regards all human love, and it is a truth of which Mr Patmore frequently loses sight. Love is never deepest when it comes first among human motives; for its depth mainly depends on its *reverence*, and there can be no reverence in a love which does not see many higher ends than its own claims. Moreover, we do not believe that it is natural to make an express object of the passion itself —to be on the look-out for love. An *amans amare* does not deserve to find what he seeks. Love that is the gradual and unconscious birth of blending sympathies is far higher and far more common and natural. As we have said, we have no great respect for the hero of this poem; and do not hesitate, therefore, to reject as entirely false to nature, in at least nine cases out of ten, his arbitrary dictum, that every unmarried man worth anything makes it his "chief thought in life" when he shall marry:—

> "I kept the custom; I confess
> I never went to ball, or fête,
> Or show, but in pursuit express
> Of my predestinated mate;
> And thus to me, who had in sight
> The happy chance upon the cards,
> Each beauty blossomed in the light
> Of tender personal regards."

We confess we think that if this were so, he deserved nothing better than to marry Honoria. Honoria seems to have had no interests beyond those of "tender personal regards," in which they *could* have shared together; and the passion, therefore, to be described is all of it *explicit* passion for the lady, not that far higher kind of passion which springs originally from common sympathies and interests in thoughts and worlds beyond themselves. Idolatry is always small and poor; and it is the tendency to idolatry in the love-making of this poem which keeps it so often down to the level of the earth. Indeed, idolatry is the *stifling* element in almost all love-poetry which renders it so intolerable to read continuously; but it is also the *unreal* element which does not nourish love, but exhausts it. This is, in fact, the weakness of the "subjective" poetry, that it will dwell directly in the phenomena of passion, although an adequate delineation of it can only be given by its indirect influence on the *other* currents of thought and feeling. Mr Felix, going about like Cœlebs "in search of a wife," precludes himself from finding all that he ought to want. The direct gaze of the mind weakens the delicate truthfulness of natural sympathies. The highest love is, we must repeat, not indeed unconscious, but certainly not of self-conscious origin; it springs from spiritual affinities, and tends to the delight of deeper sympathy rather than of constant mutual admiration. The theme of Mr Patmore's poem is far too much the love of admiration. And consequently, the parts of it that are the most noble and poetical, are those in which the eye is lifted away from the lovers altogether into general contemplation. The "destined maid" sickens us. It is all very well to hear occasionally of the gusts that "shook her curls and vexed the ribbons at her waist," but we can't stand too much of it. A poem such as Mr Patmore has set himself to write should not be content with delineating personal fascinations. Especially in the books he still proposes to give us must he beware of this. What may be pardonable up to the wedding, will be intolerable afterwards; and we shall expect in the future books to see the horizon of his poem expand —to see the blending of the religious and intellectual life of his hero and heroine—to see the mingling of waters between the river and the lake, and to see them mingle not merely as if they were drawn together by mutual attraction, but by those deeper currents, at work in them both, which force their waters to seek a common issue from the narrow banks within which they are confined. Mr Patmore seems to delight, like some other poets —Shelly for instance—in keeping the object of passion distinctly and separately in view; nay, he seems almost to dread the sympathy which might unite two minds in an unconscious identity of faith and love. He says, with much beauty, in one of his earliest poems, in the name of a man on the eve of his wedding:—

"He dreads lest time should make them twain,
Or use should let them run
With undistinguished heart and brain,
Like dew-drops, into one;
Not prescient of the strong defence
Of thoughts that still perplex
With all the countless difference
And sweet consent of sex."

And again, in this later poem:—

"And in the warmth of hand to hand,
Of heart to heart, he'll vow to note
And reverently understand
How the two spirits shine remote;
And ne'er to numb fine honour's nerve,
Nor let sweet awe in passion melt;
Nor fail, by courtesies, to observe
The space which makes attraction felt;
Nor cease to guard, like life, the sense
Which tells him that the embrace of love
Is o'er a gulf of difference
Love cannot sound, nor death remove."

This is finely said, as well as true; but it is not true, that to gaze over the gulf between mind and mind at the opposite shore is the course of action which "makes attraction felt." The difference is, in fact, the source of the attraction, but it can be felt only as the source of attraction in the act of exercising the powers and gifts which are so different; and of course it can be delineated only through a faithful delineation of such intellectual and spiritual differences as find their complement and completion in union. No doubt such a delineation is a difficult task. But this is, as we understand it, the great purpose of Mr Patmore's poem; and it certainly is not answered by merely making his readers feel that Felix thought Honoria an angel, and Honoria thought Felix a god. This direct gazing at each other is not that "marriage of true minds" which he has undertaken to sing. He is bound to show us the unity of moral and intellectual difference, and that the *ground* of unity does not consist in the deficiency on either side, but in that completeness to which each helps the other to attain. Mr Patmore exercises the minds and hearts of his characters far too little on objects outside themselves. It is "love in idleness" all through his poem, and therefore not unfrequently degenerates into idle love. This is quite unworthy of his powers. There is no incident, no grief, no suspense, no spiritual doubt, no tasking effort, to bring out the sustaining strength of mutual love,—nothing that helps us to see how much greater is the union of love than the love of union. Love is blind only when it is self-consciously mistaking the part for the whole—the single ray of beauty for the entire splendour of perfection. But in action, in life, in the *indirect* strength it pours into another's soul, it is not blind; because the great realities of life and faith are kept full before the mind,—thus rectifying the partialities, while rejecting none of the help that purified love can give. Mr Patmore has a greater work before him than he has yet attempted, if he is to make his poem worthy of his theme. He must show us the growth of the affection, after the flutterings of gratified vanity and worshipping admiration have subsided; he must show it us in the keen fire of grief, and strengthened by self-sacrifice; he must show it us modifying the intellect, enlightening the conscience by mutual gleams of light and confirming trust. He is deeply impressed with one great truth, which he has finely expressed in the following lines. The rainbow, he reminds us, can only be seen by one who stands outside the "glittering shower." If you try to get too near it, you are enveloped in the cloud:—

> "With whatsoever's lovely, know
> It is not ours; stand off to see;
> Or Beauty's apparition so
> Puts on invisibility."

But there is another equally great truth which his poem does not express,—the truth that *seeing*, after all, is not the way to *assimilate* spiritual beauty, nay, is often the way to lose all hold of it; for mere *sight*, even the poet's sight, constantly substitutes the partial for the perfect glory, where *life*, with its anxious toil and want, would reject none of the blessing, and yet would recognise all the deficiency.

Mr Patmore seems to us to take at once an exaggerated view of women's natural graces, and a very depreciating view of their capacities for growth. Let us admit freely that women are often quite as dull, and, if dull, a vast deal more insipid and wearisome than men. We think there must be something of strange idiosyncrasy in Mr Patmore's constitution if he can truly say—

"Yet if I come where women are,
How sad soever I was before,
Then is my sadness banished far."

At least our experience is not similar. The "sudden polar spring" comes to us quite as often from the influence of men as from that of women, if we are to speak generally and in the rough. On the other hand, while flattering thus their sunny influence, he treats them as if they had no more capacity for moral and intellectual growth than a flower or a bird; and, in his very fine "parallel" between men and women, assigns all the gradual progress to those, and attributes an involuntary blossoming to these:—

"Where she succeeds with cloudless brow
In common and in holy course,
He fails, in spite of prayer and vow,
And agonies of faith and force. . . .
Her spirit, compact of gentleness,
If Heaven postpones or grants her prayer,
Conceives no pride in its success,
And in its failure no despair;
But his, enamoured of its hurt,
Baffled, blasphemes, or, not denied,
Crows from the dunghill of desert,
And wags its ugly wings for pride.
He's never young nor ripe; she grows
More infantine, auroral, mild,
And still the more she lives and knows,
The lovelier she's expressed a child. . . .
Or say she wants the patient brain
To track shy truth: her facile wit
At that which he hunts down with pain
Flies straight, and does exactly hit.
Were she but half of what she is,
He twice himself, mere love alone,
Her special crown, as truth is his,
Gives title to the loftier throne:
For love is substance, truth the form;
Truth without love were less than nought;
But blindest love is sweet and warm,
And full of truth not shaped by thought."

This is very beautiful and full of insight, but it is one-sided insight, which, if carried too far, will injure the poem Mr Patmore is writing. It would be truer to say that justice is more native to men; and self-devotion to women; and as both justice and self-devotion are equally mingled in that Divine and highest love which St Paul calls *charity*,—the universal sympathy, that is, with the fair spirit of goodness, innocence, or penitence,—we cannot fairly say that either has the "substance," while the other has the "form." All love is, no doubt, full of implicit truth, as Mr Patmore says; but often a great deal more than the mere *shaping of thought* is needed to distil from the concrete feminine love of which he is singing, the *Truth* which it really contains in solution.

We have criticised freely Mr Patmore's poem, because we think it every way worthy of careful and close criticism. Mr Patmore is clearly a poet—a poet, we mean, by vocation, who has indeed received

"The power of saying things
Too simple and too sweet for words."

And he is not only a poet, but a poet whose mind has grown visibly and rapidly since his earliest productions. There are, no doubt, in the volume of poems called "Tamerton Church Tower," many indications that he was not merely one of those who, in the opening years of youth, feel the necessity for some deeper expression of their feelings than ordinary speech permits, but whose powers, when expanded and developed, tend either to abstract or practical pursuits. Almost all young men of sensitive temperament write verses, of more or less merit, as a kind of safety-valve for emotion, in that intensely "subjective" period of life when, living as they do in a subjective era, they may be called (by a slight twist of the detestable transcendental phraseology of the day), subjecto-subjective; subjective in the first degree by inheritance, and doubly subjective through the self-conscious temperament of youth. Mr Patmore's early verses were not of this kind. They showed the happy discriminating insight and tact of expression which are so conspicuous in his later poem. Still, they had all the limpness, the want of firm texture, purpose, sustained thought, and clear conception, which distinguish the *turbid* period of the intellectual life. You can see in them, as in the chrysalis, what he himself has finely called

"The blind uneasy motions
That foretel the higher life."

As far as the art of *expression* goes, his genius will probably go no further. The simplicity, the taste, and harmony of his verse, is all that we could wish. But he has yet to gain much of the grasp of truth, and the "power of more melancholy wisdom," which distinguishes the maturest life. We do not wish him to become abstract, for *that* a poet can never be; but the same mental tendency which, in ordinary men, tends towards abstract modes of thought as they advance towards maturity, may be of great use to his genius. A little more of the primeval rock on which our life is based, and a little less of the overlaying flowers and sod, would add dignity and interest to Mr Patmore's landscape. This, we think, it will be the natural tendency of age, and of that decision and even inflexibility of thought which age brings with it, to give. There is no fear that it can do him any harm. He never analyses, he never reasons; he always *delineates*, in a living form, the intellectual truths he wishes to enforce; and if these truths should, in future, occupy a somewhat greater share in his mind, and the little accessories of delineative skill a somewhat less share, the effect of his pictures can only be enhanced. Indeed, we would gladly see the sequel of his poem even more full than the introduction, of thoughts so noble and so exquisitely presented as we find in the following lines:—

"Would Wisdom for herself be woo'd,
  And wake the foolish from his dream,
She must be glad as well as good,
  And must not only be but seem.
Beauty and joy are hers by right;
  And, knowing this, I wonder less
That she's so scorned, when falsely dight
  In misery and ugliness.
What's that which Heaven to man endears,
  And that, which eyes no sooner see
Than the heart says, with floods of tears,
  'Ah! that's the thing which I would be?'
Not childhood, full of fears and fret;
  Not youth, impatient to disown
Those visions high, which to forget
  Were worse than never to have known. . . .
Not these; but souls found here and there,
  Oases in our waste of sin,
When everything is well and fair,
  And God remits his discipline,
Whose sweet subdual of the world
  The worldling scarce can recognise;
And ridicule, against it hurled,
  Drops with a broken sting and dies.
They live by law, not like the fool,
  But like the bard who freely sings
In strictest bonds of rhyme and rule,
  And finds in them not bonds but wings."

RECENT PUBLICATIONS.

ART. XI.—I. *On Beauty: Three Discourses delivered in the University of Edinburgh. With an Exposition of the Doctrine of the Beautiful according to Plato.* By JOHN STUART BLACKIE, Professor of Greek in the University, and of Ancient Literature to the Royal Scottish Academy. Edinburgh: Sutherland and Knox. 1858.

HEGEL said to a friend who was watching by his deathbed, "I have no one who can explain me to the world except yourself, and even you do not understand me." We are far from applying the left-handed compliment of the apostle of absolute idealism to Professor Blackie. But, touching the exposition of Platonism to this somewhat unsentimental generation, the ghost of the great Athenian idealist might appropriately address our author in the former part of the saying. Whether, in its contact with "our German brethren," it has, in its wanderings from brain to brain, caught enough of humour to fit it for the use of the latter part, it is not for us to guess. Whether the "Spirit of Plato" is worth listening to, and whether his philosophy will becomingly graft on the Scottish stock, are questions to be dealt with on the merits. Our persuasion is that we need Plato, and especially Professor Blackie's exposition of his views, both in our colleges and in our academies of art. And if Ethics and Psychology are to be only *academically* discussed, the one will be much the better of his genial sunny thoughts on the ἀγαθόν, the good; and the other would get benefit by direct, full, and warm sympathy with his views of the καλόν, the beautiful, the noble. We cordially thank Professor Blackie for setting our minds astir on these matters, and for his dashing and thoroughly able Discourses on Beauty. He brushes aside long accepted theories of the Beautiful, like so many cob-webs, and guides us straight towards those great thoughts which underlie the visible and the apparent. And, no doubt, as Wordsworth puts it—

> "When deeply drinking in the soul of things,
> We shall be wise perforce."

Frank, generous, enthusiastic, a man with broad flesh and blood sympathies, richly endowed with intellectual gifts, having a memory stored with the products of ancient and modern thought, gifted with a fine taste, and withal, possessing poetical genius more than second-rate, no one is entitled to speak with more authority on Beauty than Professor Blackie, and no one is so well fitted as he to smash the alleged "contemptible commodious theory" of Jeffrey, and to win thinkers to the views of Plato. We once intended to have devoted much more space to this notice than we can now do. This, however, has become less needful because of the note on Beauty in another article of our present Number (Dugald Stewart), and because, in Article III., full expression is given to our idea of Beauty in Architecture. But we have read most of this book with so much pleasure, and we recently so thoroughly enjoyed the Professor's ἐξωτερικοὶ λόγοι on the same subject at the *Ulbster Lecture*, (thanks to Miss C. Sinclair), that we cannot leave the Discourses on Beauty without some remarks. As we glance at the many things in heaven and earth which the accomplished Professor presses into his service for illustration and proof, we remember the words of Socrates :—"Dear me, how much more knowing men now are than those of the olden time." Had Jeffrey possessed a tithe of the varied information here brought to the discussion of Beauty, his theory would have lasted longer. We would not have so easily seen through it. We would have gone on blindly mistaking darkness for depth. We wonder, too, what they (and there are still a goodly number of the old generation in Edinburgh), who used to look to *Craigcrook* as the home of one infallible in all æsthetical matters think, when they behold their idol so roughly handled by Professor Blackie? They must read with astonishment of Jeffrey as the man "whose shallow sophisms were propounded with graceful dexterity," p. 4; "who ignorantly quotes the *Hippias Major* of Plato for his notions on Beauty, instead of the *Philebus*," p. 47; and "who" ("a very notable fact in the history of human delusion!") "promulgated in religious Edinburgh, at the beginning of this eighteenth (?) century a sceptical system with regard to the τὸ καλόν, directly hostile to all faith in a Divine order of things in the visible world," p. 160. Alas for the fame of Jeffrey, and the merits of the last edition of the *Encyclopædia Britannica*, if all this be to the point!

We have as low an estimate of the "Association Theory" as our author; and hold by the broad, Saxon-like, and common sense views of Sir Joshua Reynolds, whose words, we think, might have fairly claimed from the Professor a place among "The Testimonies of the Wise." "He who is ambitious," says Sir Joshua, (Lect. VIII.) "to enlarge the boundaries of his art, must extend his views beyond the precepts which are found in books, or may be drawn from the practice of his predecessors, to a knowledge of those precepts in the mind, those operations of the intellectual nature, to which everything that aspires to please must be proportioned and accommodated." Again, in Lect. IX., he remarks, with a force that might please a Platonist, "The art which we profess has Beauty for its object; this it is our business to discover and to express. The beauty of which we are in quest is general and intellectual. It is an idea that subsists only in the mind; the sight never beheld it, nor has the hand expressed it; it is an idea residing in the breast of the artist, which he is always labouring to impart, and which he dies at last without imparting, but which he is yet so far able to communicate as to raise the thoughts and extend the views of the spectator; and which, by a succession of art, may be so far diffused, that its effects may extend themselves imperceptibly into public benefits, and be among the means of bestowing on whole nations refinement of taste." But, dissenting as we do from the "Association Theory of Beauty," is the Platonic theory to be regarded as properly its opposite? We suspect that there is much more common to the two than Professor Blackie would be willing to admit. We are aware of the fearful risk of this statement, and know that we expose ourselves to a whole host of charges of ignorance, rashness, and the like. But what really was the Platonic standard of the good and the beautiful? Was it not that the moral quality, or the object contemplated, should harmonize with the absolute good and true; and becoming, as known by the soul in its perfect pre-existent state, the reminiscence of which it had brought with it into this world—a world fair, indeed, but never so fair as the super-sensible? But is this not "Association" under a different name? In the case of the Athenian, the soul only wandered into another world for its foundation! Of course, this could not be expected from Lord Jeffrey, whose soul, we imagine, had at that time no other world thoughts of any sort. Now, (to take the Professor's graphic illustrations,) wherein lies the difference between my estimate of the beauty of a perfect sphere, because I associate it with the happiness of "my boy Tommy" when he played with it in bib and tucker, or of the oblate-spheriod, because I remember how my teacher used to look blithely learned when he brought it out to illustrate the shape of the earth, and Plato's estimate of the beauty of the same forms, because they seem to give perfect expression to the archetypes (παραδείγματα), which reminiscence makes known as existent in that world, up or down, from which the Platonic souls came? Logically, we suspect the estimates must be held as founded on a process entirely the same. If the other world had thrown its spell over Jeffrey when he wrote the famous article on Beauty, he might have been a Platonist also! The plain truth is, that, even with Professor Blackie as the interpreter of Plato to this matter-of-fact generation, we do not wish to be bound by Plato as an authority. He may be too good for us, but we confess we would rather follow his interpreter than himself. Professor Blackie holds that Beauty, like Truth, is eternal,—that the idea of the beautiful has its roots deep down in our truest spiritual nature, and that they twist round, and even seem to form part of the true man in man—the very *ego*, spiritual, imperishable, immortal,—and that it is innate and everlasting. All this we grant, even as we hold that the moral faculty is; but this does not necessarily imply that the utterance of the idea will either be uniform or true, or that we have any unvarying standard of beauty. This, let us say, we consider the weak point in the volume now glanced at; it is a point, too, which got great prominence assigned to it at the delightful *Ulbster Lecture.* The question comes virtually to be this—if we have no true, eternal, and thoroughly reliable standard of Beauty, can we have any such of Morality? Now, looking at the question from the non-Christian point of view, we would frankly answer, No. Thus, the variable standard of morality in different ages and climes: thus, the constant power in shifting circumstances and interests to turn the moral faculty from true decisions. We call Commissioner Yeh a murderer; but the stolid Mandarin reckoned it perfect political virtue to cut off thousands of heads on the whim of the moment. So with the standard of Beauty. It was not in Plato's power to fix it, and our author should entertain this thought at once. It will save him from much disappointment. The standard is variable, and *must* ever continue so. Dr Livingstone's Travels bear testimony to the direct antagonism between the African's ideal of beauty and our own. Has Professor Blackie forgotten his friend Professor Simpson's story of the Islanders who remove the cartilage of the nose and insert a bit of wood to elevate it out of all proportion to the face, in order to seem beautiful? Yet, we have an unvarying, unerring, standard of morality. We were in no need of a *theory* of morals; the world has ever had abundance of *theories;* what we needed was a *revelation*, and God has given us this in the Bible. But though we have the faculty for loving the beautiful in nature and art, we have no infallible bible of Beauty—no unerring standard of appeal. The world is not: because we cannot so deal with its parts, or so generalise its details, as to satisfy all. We suppose, then, that each will be content to fall back on his own ideal, and call that beautiful which answers to it "as ocean's moon does to the moon in sky." We grant that this ideal may be influenced, may be trained, and that in some it is purer and nobler than in others; and with this in view, Professor Blackie has a broad platform of operation.

We are curious to know why the Professor looks so palpably asquint at the attitude of Scottish Christianity to the fine arts. He clearly holds that the strong Calvinistic element in it is not only shy of art, but directly hostile to it. We wholly demur to this estimate, and call for proof. We will not take the alleged historical testimony to our religious vandalism, as shown in the destruction of pre-reformation buildings. There may have been something of this during a period of strong emotions and great social changes; but were this the place, we hold it capable of proof that the "interesting ruins" were fast forming before the enraged populace took to the work of spoiling "the rooks' nests," smashing a nose of the virgin here and there, or beheading a stone-saint. The abbeys and picturesque churches had been neglected by the priesthood; and when the Reformation became a reality, the nobles and landed gentry grasped at the church revenues, and rendered it impossible for the Church to do more than obtain the plainest buildings to worship in. The talk about grim Calvinism on the part of a generous-hearted Scotchman, like Professor Blackie, is too much. If he finds people in Scotland who refuse to see beauty in pictures, and sculpture, and architecture, and who would deny these all regard, as sinful and profane, let him not set it down to Scotch Calvinism, for there is a right, genial, sunny heart in Calvinism, whether he may acknowledge it or no. How could it be otherwise, when the soul, instructed in this system of doctrine, which contains the grandest purely intellectual generalizations of the thoughts of God, must, if a living soul, stand consciously in the favour of Him of whose own beauty the world is lavishly full, and be time after time receiving the joy unspeakable and full of glory. Whatever system may abjure beauty, it is not certainly the Calvinistic. The sooner we stand up for this the better. But, the fact is, the charge is the result of a misconception both of the sphere of art and of the genius of the Scottish Church. We believe that the place of sculpture and painting *is* outside, but do not think that we value them less, or have less enjoyment in them than our author. A place of worship is a necessity; and we hold that the most rigid Calvinism would not quarrel with the finest Gothic structure ever reared. Distracting accessories of the Gothic it might be displeased with, and wish to banish "the thousand heraldries," "twilight saints," "dim emblazonings," and "shielded scutcheon blushed with blood of queens and kings," which awed the imagination of Keats, but it would not reject the "casement high and tripple arched—"

> "All garlanded with carven imageries,
> Of fruits and flowers, and bunches of knot-grass."

But why not copy the heathen, and why not follow the footsteps of a corrupted Christianity, and gather into one all the glory and beauty which still linger around "poor shrivelled and crippled humanity?"—(P. 9). We have no objection to this, only we would not take the expression of the generalized elements of wisdom, of love, or of joy, into the sanctuary, as if He with whom we seek to meet there, would be pleased with the wonders of human skill. Granted for a moment that it were within the scope of the artist's power to gather into one the many broken rays of wisdom, and express these in a form which would suggest perfect wisdom, would not this be doing no more than what, without it, is already before God. If there be lingering good in poor humanity, as much as is in every man is already seen by Him, and He accepts its homage, for all His works praise Him. Yet, though banished from the sanctuary, we can see a noble sphere in which art may throw abroad its intellectually elevating and refining influences to good effect—even in our halls of public resort, in our lecture-rooms, and in our dwellings. The history of the progress of art in Scotland, during the last twenty years, is proof in point that we are not so far behind as Professor Blackie, with kindly exaggeration, would have us believe, and that it is not needful, in order to secure advancement towards great excellence in painting and in sculpture, that we should adorn with them the interior of our churches.

So frankly does Professor Blackie deal with all these topics in his very able Discourses on Beauty, that we have followed a like freedom of remark. In conclusion, we sincerely hope that the Professor may be soon led to elaborate other portions of that "complete scheme of a large work on æsthetic philosophy, which he possesses among his manuscripts." Meanwhile, we accept the Three Discourses on Beauty as a most welcome instalment.

II.—1. *The Students' Manual of Geology.* By J. Beete Jukes, M.A., F.R.S., etc. Edinburgh: Adam and Charles Black.

2. *Geologie Appliquée—Traité Du Gisement et De L'Exploitation Des Minéraux Utiles.* Par. M. A. Amedee Burat. Deux Parties. Paris: Langlois et Leclercq.

3. *Scripture and Science not at Variance.* By John H. Pratt, M.A., Archdeacon of Calcutta. London: Thomas Hatchard. Calcutta: R. C. Lepage and Co. 1858.

The works named above, well represent the motives by which three classes of minds are drawn to the study of Geology. The first is devoted to a purely scentific treatment of the subject. Without any attempts to force facts into harmony with previously formed theories, we are simply asked, by one who from his exact and varied attainments as a field geologist is entitled to speak with authority, to learn the chemical and mineralogical character of the rocks, their peculiarities of deposition and stratification; the remains of animal life and of vegetation, which lie hid in them, and as much as can be safely affirmed of the order of their appearance. The second work carries the labours of the field geologist into direct practical issues. In common with Mr Jukes, the author of "Geologie Appliquée," treats of the order of the rocks *in situ*, looks at them with the eye of a highly accomplished mineralogist, examines carefully their chemical and mechanical structure; but, while the former makes all these observations bases for palæontology, the latter sets them in purely industrial and economic lights, by using them in mining and engineering purposes. Much of the third work is devoted to the exposition of the relation held to exist between Geology and Scripture, and is to be regarded as another of those contributions to the literature of physico-theological science, so many of which have recently claimed the notice of our readers.

As long as the three classes of minds now referred to continue to be directed to geological studies, we may count on the multiplication of works peculiar to each. The ever widening field of speculation which must result from the rapidly increasing knowledge of the earth's crust, will continue to attract multitudes of earnest minds, for whose satisfaction a fresh many-sided literature is sure to be forthcoming. Thus, every contribution to natural science, made by men competent to the task, will not fail to be welcomed. Were there no other motive-forces at work, though there are many, the demand would certainly create the supply. All who love the science for its own sake will rejoice in every addition to our knowledge of phenomena. Those, again, who have constantly before them the probable industrial bearings of new discoveries in geology, will follow earnestly in the path of geological investigation, and will be ever on the alert for whatever shall seem capable of being applied to the material wealth of the nation. And those whose studies have been much in the Word of God, will readily welcome the works of any man, who shall tell us yet more of His presence in the world also; but the fact, that ill-informed minds have contrived to speak strongly and plausibly of a want of harmony between science and scripture touching creation, comes to give an apologetic cast to many works in this last department. Not many years have gone by since we placed the first direct contribution to this on our book shelves, but now we can count them by scores. When the charges of contradiction were openly made, it was found that in all the churches, Protestant and Romanist, "reconcilers" actually abounded. Looking at the results, we confess, we would have been thankful for fewer.

But leaving this line of remark, we turn with pleasure to the masterly work of Mr Jukes. "Early," he says, "in the year 1854, the late Professor Edward Forbes asked me to be his fellow-labourer in writing the article on geology in the new edition of the *Encyclopædia Britannica*, and a text-book to be founded on it." The death of E. Forbes—a man not only among the greatest of this age, but one of the most loveable we ever met—interfered with this proposed brotherhood of action, and Mr Jukes undertook the task alone. "The Student's Manual of Geology" is the result; the title is appropriate, because the work is not likely to become a favourite with any save those who study in order to thoroughly scientific attainments. It has little of that popular attractiveness which is found in richly descriptive power, in the graphic statement of the curiosities of the science, or in the off-hand geology-made-easy method of treatment. We like it all the better for this. No attempt is made to persuade the student that this peculiarly difficult science may be profitably followed without long, careful, earnest, and laborious study, both in the library and in the field. As a handbook for the student, and generally as a book of reference, the "Manual" will be found of great value. Not indeed that it is a mere bald catalogue of hard names, or that it is destitute of those speculations as to the causes of phenomena, which will ever give interest to the highest kinds of manuals of science; because, as we shall see, there is a good deal of this employed in a way which gives us a high estimate both of the author's science, and of his common sense. Nor is this opinion modified, when we discover here and there the frank expression of doubt on several points, on which a less practical geologist would at once have dogmatised.

In a well written introduction, Mr Jukes points out the scope of geology, its relation to chemistry, to mineralogy, and, in one great branch of it, to zoology and botany. He insists on a knowledge of these, in order to the successful study of this science. "In order," he says, to "reduce the great subject of geology to something like order, it appears to me advisable to divide it into three heads, for which we may use the terms—1, Geognosy; 2, Palæontology; 3, The history of the formation of the Series of Stratified Rocks. . . . . By Geognosy, I would understand, then, the study of the structure of rocks, independently of their arrangement into a chronological series, and I would divide it into two parts—Lithology and Petrology. By Lithology I would mean the study of the internal structure, the mineralogical composition, the texture, and other characters of rocks, such as could be determined in the closet by the aid of hand specimens." It will be observed, that in the "Manual," the sphere of Lithology is restricted to what has usually been reckoned the province of mineralogy proper, and is not made, as the late Professor Fleming made it, to include all questions touching the divisions of strata and the relative positions of different series of rocks. These come in under Petrology. There can be no doubt, but that this distribution of geology will be helpful to the student. The chapter on Aqueous Rocks, is full of interesting matter. It would, however, have been better if Mr Jukes had not turned aside to state the alleged cause of glacier motion. While Professor James Forbes' Theory (not as we think very clearly and happily stated by our author) is accepted in the text, we have reference made in a note to the objections taken to it by Professors Tyndal and Huxley, and their theory of fracture and regelation is given, as if Forbes' Theory had been conclusively set aside. But Mr Jukes knows, that the exposition of the laws of glacier motion, given so graphically by the accomplished Edinburgh Professor, is that which is still received by the great majority of men of science, as the most satisfactory of the three theories which have been proposed, namely the *gravitation* theory of De Saussure and Hopkins; the *dilatation* theory of Charpentier and Agassiz, and what we suppose we may call the *river* theory of Forbes. It seems to us that the views of Tyndal and Huxley, may be resolved into the theory of dilatation. By a series of beautiful experiments, Forbes showed that the laws of glacier motion are much the same as those which govern the course of rivers. That is, that the progress is faster at the centre than at the sides, more rapid at the surface than at the bottom, and *the same by night as by day.*

In referring to the deposition of mud by rivers, the views of Mr Babbage and the calculations of Sir Charles Lyell, are given by the author. They seem quoted as if conclusive. But it is well to bear in mind that there is a growing tendency to question the trustworthy character of the alleged data for these calculations. The subjects treated of under Petrology,[1] give Mr Jukes free scope for the employment of all his information as a field geologist, and he does not fail to use it successfully in all his discussions. His correct appreciation of the relation of modern zoology and botany to palæontology, is shown by the prominence assigned to these studies as indispensable to the palæontologist. Under this division, we have a resumé of the different views held on the distribution of plants and animals; and special favourable notice is taken of the well known theory of Edward Forbes, on generic centres of creation. This theory does not now bulk out so largely as it would have continued to do, had the lamented author of it been spared to multiply what he held to be illustrations of it, but what others have regarded as capable of another kind of explanation.

Another distinguishing excellent feature of the Manual, is the presence of a catalogue of fossil animals and plants—the catalogue of animals being formed according to the system of Pictet, modified so as to admit of the great improvements of Professor Owen; and that of plants is based on "Bronn's Index Palæontologicus." The descriptive outlines of the different great groups of strata are also followed by lists of their characteristic fossils. The last division of "The Manual" contains some exceedingly interesting remarks on the chronological appearance of the various formations. These remarks are valuable, as going to smash all those imaginative efforts which have recently been revived, to find a cut and dry correspondence between the formation of the earth's crust and the days of Genesis.

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[1] We prefer the old way of writing this word—*Petralogy.*

We would specially direct the attention of our readers to the remarks, at p. 401, on this subject. The sum of Mr Jukes' statements may be given in a few words from the last book mentioned above:—"I think," says Archdeacon Pratt, when referring to the *age-theory*, "that some of the most eminent geologists are of opinion, that the division of the geological periods cannot be made out satisfactorily, so as to coincide with this interpretation"—(P. 38). Mr Jukes, on good grounds, characterises the commencement of the so called Primary Epoch, as "necessarily uncertain, doubtful, and irregular." Periods of great change are acknowledged in the introduction of the Secondary and Tertiary Epochs, but these are associated with phenomena, which led Edward Forbes to propose the rejection of the present arrangement according to *three* great divisions, and to include all under *two*, namely, the Palæozoic and the Neozoic. After these remarks, we need scarcely say that we very cordially recommend "The Student's Manual of Geology."

M. Amédée Burat is Professor of Geology and Mining in the Central School of Arts and Manufactures, Paris. The volumes quoted above are devoted to the survey of geology from the point of view of the mining engineer, and to its application to the successful working of mines. Having in the first volume, that devoted to practical geology (*Geologie Pratique*), given a clear and popular account of the soil—shown its relation to the underlying rocks—discussed theories of aqueous and volcanic action—stated, as only an accomplished man of science could, certain fundamental principles, according to which rocks are classified; and having described the principal metalliferous districts of the Old and the New World, M. Burat, in his second volume, devoted to mining (*Exploitation des Mines*), assumes this knowledge, and upon it as a basis proceeds to the illustration of mining operations. Much attention is bestowed on methods of mining, and on the machinery best fitted to be helpful to the work. The author has a good knowledge of the various mechanical appliances in use in different countries. These he passes in review—gives drawings of the most useful—and describes carefully the manner of their employment. We had intended to illustrate these remarks by quotations, but the space devoted to Mr B. Jukes' work compels us to be brief. We can, however, assure all who take an interest in the subjects to which we have referred, that they will find the well written work of M. Burat useful.

The views advocated by Archdeacon Pratt, in his "Scripture and Science not at Variance," are identical with those to which much prominence have been given in this Review. They were expounded in our first volume, and they have been repeatedly set forth in succeeding volumes. A few sentences from the geological portion of the Archdeacon's able apology, will best indicate to our readers the line of remark followed by him. "The Book of Nature and the Word of God emanate from the same infallible Author, and therefore cannot be at variance. But man is a fallible interpreter; and by mistaking one or both of these Divine records, he forces them too often into unnatural conflict"—(P. 8). "Since Scripture is not designed to teach us Natural Philosophy, it is altogether beside the mark to attempt to make out a cosmogony from its statements, which are not only too brief for the purpose, but are expressed in language not fitted nor intended to convey such information"—(P. 35). "There is one class of interpreters, however, with whom I find it impossible to agree. I mean those who take the six days to be six periods of unknown indefinite length"—(P. 37). On the existence of death before the introduction of sin, the author makes some judicious remarks. Having quoted, "By one man sin entered into the world, and death by sin," he says, "And no doubt, when ignorant of the facts which the Book of Nature reveals, we should conclude, from the apostle's words, that the sin of Adam had brought death upon the irrational as well as the rational creature. But is this the necessary meaning of the passage? By no means. Science here comes to our aid to correct the impressions we gather from Scripture; and we learn from the apostle that sin had degraded God's intellectual creature to the level of the brutes in his animal nature, and in his spiritual to that of a lost and fallen being"—(P. 39).

III.—1. *Tableau de l'Eloquence Chretienne au IV.e Siecle.* Par M. VILLEMAIN. Paris, Didier et Ce.
2. *Histoire de Saint Augustin.* Par M. Poujoulat. Paris, A. VATON. 2 vol.
3. *Der heilige Augustinus dargestellt.* Von C. BINDEMANN, Doctor u. Professor d. Theologie. Leipzig, H. Schultze. Band I. u. II.
4. *Der heilige Augustinus.* Von PHILIPP SCHAFF, Doctor u. Prof. d. Theologie am Prediger-Seminar zu Mercersburg. Berlin, W. Hertz.

AUGUSTINE is undoubtedly in one sense the greatest of theologians, for more than any other divine has he, since the period of his first attaining to distinction, given an impulse to, and exercised an influence over, the theologic mind of Western Christendom. Other distinguished ecclesiastics have had their intellectual sway limited by country, confined by language, or, perhaps, even circumscribed by sect. But the Bishop of Hippo has, for fourteen centuries, possessed an influence in which he has been without an equal. While the Latin Church remained unbroken, and the Roman language continued the one medium alike of philosophy and theology for Europe, the sway of the "Doctor of Grace" was undisputed by any compeer. Minds of the most opposite character, and of the most diverse training, agreed in classing themselves as pupils in his school; intellectual homage was rendered to him alike by Anselm and Bernard and Abelard, alike by Dante and by Petrarch. And if we would measure the amount of service which Augustine rendered, we must not compare the Middle Ages with some choice era of Modern Evangelic and Protestant Christianity; we must contrast them with the contemporary period in the Eastern Church. Oriental Christendom hardly knew Augustine's name, and was entirely unswayed by his writings. Those writings prepared the way for a revival in Europe; and gave direction, in subordination to the Bible, to that Reformation. The East wanted a religious teacher possessing Augustine's spiritual depth; hence, in spite of all her great Christian writers anterior to, or contemporary with, the Bishop of Hippo, she became blighted, and, through the lapse of century after century, still continues barren. The works before us are some of the recent Continental contributions to the appreciation of the greatest of the Fathers. With the twin literary glories of the Gallican Church in the "Grand Siecle," Port-Royal, and Saint Maur, the name of Augustine is inseparably associated. The veneration and the indebtedness of Bossuet to the Bishop of Hippo are well known. In the chill philosophism of the eighteenth century he was, of course, neglected. Rousseau had the audacity to speak of him as a mere "rheteur," a name of reproach far more applicable to Jean Jacques himself. In France, as elsewhere, the nineteenth century stands out in marked and honourable contrast to its predecessor, and in nothing is this contrast more evident than in the reconsidering and reversing many of the judgments which that self-complacent age had passed. "We are," says M. Sainte-Beuve, "decidedly the most retrospective of ages; we are never wearied of searching into and unrolling for the hundredth time the past."

The revival of interest in Augustine was commenced by Chateaubriand. In his "Genie de Christianisme," he recalled attention to the intellectual merits of his works; in his "Itineraire de Paris a Jerusalem," he paid a loving tribute to the religious excellencies of his character. The seed thus cast has borne ample fruit in the volume of M. Villemain.

In the work of M. Villemain now before us, Augustine occupies by far the largest place. In so far as fulness of treatment is concerned, he is foremost as representative of Christian eloquence in the fourth century—a title which we may, in passing, remark, is not altogether correct in respect of him, as the greater part by far, both of his sermons and his writings in general, was composed after the fifth century had begun. Distinguished literary men of our country have not always been happy in their treatment of subjects within the range of theology; the theological chapters of M. Hallam's "Literature of Europe" are much the least satisfactory of any (he, for instance, almost ignores the whole Puritan authorship); and Sir James Stephen has given but an inaccurate portrait of Anselm, while he has executed what is little better than a caricature of Calvin. But M. Villemain cannot be charged with the doing of injustice, either by faint colouring or by inaccurate drawing, to the great Christian writers whom he has undertaken to portray. There is no deception in the title which he has prefixed to his most interesting volume. Its limits, of course, preclude anything like the fulness of treatment which he has given in his great work on the eighteenth century. The volume resembles more the rapid but vigorous, thoughtful, and brilliant work of M. de Barante on that same eighteenth century.

M. Villemain apologises towards the close of his notice of Augustine, for having given to his readers, from want of space, an imperfect view of writings so diverse in subject, and so voluminous in extent. The plea is a fair one; but its fairness would have been more fully admitted, if he had adhered more closely to his professed subject. He has given a number of extracts from Augustine, which pretty fully represent both the earlier and the later productions of his pen. These extracts are well chosen; and the translation, while condensing the original expression, is faithful to the meaning. But among those extracts there is not one from the sermons of the Bishop of Hippo. M. Villemain is justly proud of the French pulpit as it existed in its palmiest days. In one of his earlier writings he had remarked, "The eloquence of the Gallican Church is perhaps the finest evidence of our literary superiority." There seems to be a tacit reference to the elaborate efforts of the great preachers in the "Grand Siecle" in his criticisms upon Augustine's preaching. But this is unfair. There have come down to us no fewer than 363 acknowledged sermons of this Father, not to speak of his Expositions of the Psalms and of John's Gospel. This immense mass of discourses bears testimony both to the assiduity of the Bishop and the veneration in which his memory has been held. But it is out of the question to look for hundreds of finished compositions from any mind, even one so furnished and so fertile as that of Augustine. "No art," says M. Villemain, "no method reigns in his sermons. They differ as much from the elegant homilies of Chrysostom, as the rude manners of the sailors of Hippo differed from the artistic and luxurious society of Constantinople." This is too strongly put. We admit that Augustine cannot be claimed as an elaborate pulpit orator. But his sermons are eminently worthy of study as examples of telling power. They do not indeed harmonize with the practice of modern preachers. Our modern preachers of one class will object to their brevity; their average length is about twenty minutes. Those of an opposite class will be revolted by their homeliness—for Augustine had no idea of what has been called "the dignity of the pulpit." He is homely as Latimer, or blunt as South. His periods in his philosophical and controversial writings, and even in the more elaborate of his Epistles, are not unfrequently lengthy and involved; but in his discourses the sentences are designedly short and simple. He makes a large use of interrogation, and often deals in the Antithesis and Alliteration. Sometimes, but very rarely, he indulges in a felicitous quotation; equally infrequent are his resorts to anecdote. In aptness of illustration he has had few equals; but the illustration does not overlay the thought or interfere with the religious impression.

The work of M. Poujoulat is somewhat ambitious in title. It professes to depict the age and characterize the influence of the genius of Augustine. The author had been known previous to its publication, by various antiquarian and historical labours. He thus comes to the composition of the work before us with exercised habits of research. But occupation in other tracks of investigation could only indirectly qualify for the treatment of a subject so great as that which M. Poujoulat has undertaken. In Augustine, the African Church produced its greatest son; and in him Latin Christianity exhibited its most distinguished name. The Western Church in general, the African Church in special, must then have been the objects of prolonged and matured study before any one can satisfactorily appreciate the Bishop of Hippo. This book is the result of a study of Augustine, apart from preceding and contemporary writers. How long the composition occupied M. Poujoulat he has not told us; he speaks generally of "having lived long in thought with St Augustine, with the persons and the affairs of his time;" but evidently his knowledge of the Ancient Church lacks completeness and maturity. There is somewhat of national exclusiveness in his references to preceding authors. He never looks across the Channel, or across the Rhine. All the modern works he quotes are French. He is a member of the ultramontane party, now dominant in the Gallican Church, but a comparatively cautious one. In his volumes we are happily free from the credulity of Chavin de Malan, the virulence of Audin, and the controversial audacity of De Maistre. In the present temper of French Romanism, a book could hardly be published without a fling at Jansenism and Protestantism as equally bad; but the sentences which offend in this way are few, and need not irritate the reader. The work receives life and colouring from brief but forcible pictures of the various localities mentioned,—for M. Poujoulat has travelled over Algeria, with especial reference to the greater completeness of his book. The work is needlessly swelled by digressions; thus we have Sallust quoted in his description of the dwellings in Africa, which is much as if a writer wished to illustrate the state of England during the Wars of the Roses by references to the Saxon Chronicle. There is also a want of proportion in his History of St Augustine. Some of the Bishop's smaller works are analysed in needless detail, while a sentence or two is all that is given to the Discourses on John's Gospel—his most important contribution to the exposition of the New Testament.

It was natural enough for a French writer, especially one who had crossed the Mediterannean, to embrace or make opportunities of referring to the conquest of Algeria; but national vanity has surely reached its climax, in the supposition of M. Poujoulat, that the dying hours of Augustine may have been consoled by looking across the dreary ages of Vandal oppression and Mohammetan tyranny, to the time when Africa, delivered from its long darkness, should recommence the Christian life under the protection of the standard of France!

M. Poujoulat cannot be said to have cast any new light upon the great theme he has chosen; but he has given to the general reader a work readable in style and moderate in compass. He speaks disdainfully of contemporary French literature; but there is nothing in this book to warrant his thus seating himself in Aristarchus' chair.

Of a much higher character is the first of the German works on our table. Dr Bindemann has rightly estimated what was due, alike to his subject and to himself. He has not hurried into the arena of authorship. Several years have elapsed since the first volume of his work was issued, and the third is still delayed. The two volumes before us contain the life of Augustine, until his election as bishop in 395; somewhat more than half of his life, measured by years, but a comparatively small portion of it, measured by intellectual and ecclesiastical exertions. Dr Bindemann has adopted a chronological treatment of his subject; the easiest undoubtedly, but perhaps not the most satisfactory. Even from this, however, he is compelled to deviate. Thus half of the second volume is occupied with a description of, and very numerous extracts from, the sermons, of which only a few were preached during the presbyter period of Augustine's life. Thus we have the most constantly exercised activity of the bishop treated exhaustively before we come to any mention of his appointment as bishop. It might have been better to have pursued the plan of Hasse, in his work on Anselm, and gone over the whole of the life, before treating specially of the writings. This, however, is at most a matter of arrangement.

Dr Bindemann has taken much pains in the treatment of the important questions, which succeed one another as his theme opens out. The student will find the chapters upon Manicheism in the first volume, and upon Monachism and Donatism, in the second, most ample and satisfactory. The historian feels his responsibility, and preserves accuracy in fact, while he adheres to judgment and candour in reflection. In the quotations which he has given from Augustine, he has aimed at strict fidelity; even the repetitions and other faults in style of the original are literally preserved.

"Augustine," says he, "knew no more delightful employment than either alone, or in the company of like-minded friends, to occupy himself with the investigation of the truth of God in the Holy Scriptures. When he exercised his office as preacher, or by word or pen combated those views which appeared to him dangerous deviations from church doctrine, he felt alike the responsibility of his office and the pain of the conflict he had to wage. But when he was set free from this outwardly directed restless activity, and had the pages of Holy Writ open before him, then he experienced the enlightening and quickening power of Divine revelation, and derived fresh motive and power for each exercise of duty in the truths thus vividly brought before him" At the same time, Dr Bindemann has plainly dealt with Augustine's Expository deficiencies, and especially that fondness for mystical interpretation, which, while it never explains away historical fact in Scripture, yet sees too often in a mere textual difficulty a "mystery," tenderly to be handled, and unquestioningly to be received.

Perhaps the author may be reserving it for his concluding volume;

but as yet, he has not given us a view of the state of religion and morals in the African Church in Augustine's time. That must often have grieved the Father to the heart. Without dwelling too much on such statements (and they are not infrequent), as that there are few at the House of God, and those who did attend, were somewhat impatient listeners, there is too plain evidence in the sermons and epistles of the degeneracy of the church. Manicheism was on the wane, and in the country, in general, Paganism was thoroughly in a state of decay; but the Catholic Church was in a deplorable state. We are accustomed to hear much of drunkenness and "the great social evil," in our day; but offences against sobriety and chastity were far more prevalent then than now. Some suspicion may attach to a writer like Salvian, as if he wanted to make out a case; but none can attach to the reluctant witness of Augustine.

Dr Bindemann might also have adverted to the influence of Tertullian over Augustine. That daring and intense writer, from whose pages a larger proportion of striking sayings may be quoted than from any other father, is not often mentioned by Augustine; and when quoted, it is for the purpose of refutation. Yet, though Augustine has been guided by Cyprian and Ambrose in his church system, neither the one nor the other gave him the intellectual impulse communicated by the author of the "Apologeticus."

The little book of Dr Schaff was originally a series of articles in a religious magazine, and is intended for popular circulation. It is addressed to "the friends of the Kingdom of God;" and, as the preface tells us, is designed to contribute somewhat towards making church history available for general religious edification. The materials of the book are largely drawn from the "Confessions;" and hence the life of Augustine, before his conversion, is drawn out in far greater detail than his post-baptismal and ecclesiastic history. Though a small book, it is far from a superficial one: while it communicates information, it stimulates thought. It bears throughout the impress of thorough acquaintance with ancient and modern Church History. We quote a sentence or two from his estimate of Augustine:—"He is of all the Fathers the most evangelical, and therefore the most Protestant, and hence is explained the great veneration which the Reformers cherished towards him and the Protestant Church has ever since maintained. In the midst of the forms of the great Catholic organisation, which he identified with historical christianity itself, he had a heart penetrated by the deepest spirit of the Gospel, and cherished the most lively consciousness of the depth of human sinfulness, and the necessity for the interposition of Divine grace. Experimentally, he passed through the evil of self-knowledge to the blessedness of the knowledge of God. None of the ancient writers have with such power of thought and variety of illustration, examined, developed, and enforced the co-relative doctrines of sin and of grace." He quotes with approbation the remark of Böhringer, that "Reformation, Middle Ages, and Antiquity have equally a share in Augustine."

IV.—*A Review of the Progress of Mathematical and Physical Science in more Recent Times, and particularly between the Years* 1775 *and* 1850; *being one of the Dissertations prefixed to the Eighth Edition of the "Encyclopædia Britannica."* By JAMES D. FORBES, D.C.L., F.R.S., Professor of Natural Philosophy in the University of Edinburgh. Edinburgh: A. and C. BLACK.

WHOEVER undertakes to write the history of Science will find the task beset with difficulties. It is not a work by which he can expect to fascinate, or even interest his readers. Unlike the history of a great empire, whose plots and wars and revolutions delight or awe the imagination without straining the understanding, the record of a discovery in science, which may spread civilization to the darkest regions of the globe or increase tenfold the social enjoyments of man, is generally made up of dry details. The result of all great discoveries is the supply of human wants or the removal of human imperfections; the process by which they are reached cannot be understood without close thinking, if not many years of preliminary study. The discovery itself may be made plain to a child; the knowledge of the path which the discoverer trod to gain his end is usually confined to a few. Kepler's long-continued battle with the 8′ in the motions of Mars has led to results of the greatest value and simplicity; Watt's "little tin cylinder" proved the root of a tree, whose trunk has grown and whose branches have spread till there is scarcely a nation on earth which does not rejoice in its shadow; but how few have mastered the principles of their discoveries? It is impossible therefore that a history of science can ever be more than "very readable." It may be useful to the student, but it will never please the idler. It will be taken up as a book for hard reading, not for a leisure hour. The historian of science finds most of his readers in a section of the highly educated class, who, without engaging deeply in scientific pursuits themselves, desire information on the progress of science. But though the audience may be small, their minds are cultivated and critical. If the historian discharges his duty, he will enjoy the satisfaction of having gratified men who are both competent to judge of the merits of his work and disposed to make due allowance for its shortcomings.

The period in the history of science which Professor Forbes has reviewed extends from 1775 to 1850. A more difficult task could scarcely have been undertaken. The period embraces the highest triumphs of the astronomer in developing the theory of gravitation, the most profound researches into the nature of light and heat, and the rapid advances of the modern science of electricity. But the discoveries made in these sciences during the last century are least susceptible of a popular treatment, at least from writers who aim at a just exposition of the difficulties and triumphs of scientific inquiry. They have tasked the highest powers of the mathematician; experiment itself has become technical. The difficulty of selecting the salient points in a voluminous history is small, compared with the difficulty of clothing the abstrusest technicalities in language intelligible even to educated men. The historian of an empire requires to make a selection of facts; the historian of science, besides discharging that duty, must also explain the unknown to his readers. Professor Forbes has performed the latter of these labours with the clearness and precision for which he is distinguished. He has brought to the task a breadth of view which few scientific men are in a position to take, and a freedom of treatment due not less to his duties as a teacher than to a comprehensive grasp of the whole subject. But it must be confessed, that familiarity with the various departments of Natural Philosophy, or unwillingness to leave anything of importance unrecorded, has sometimes led him into details for which few readers will be grateful.

Various judgments will be passed on the selection he has made among the immense mass of materials which he had to digest and arrange. Scientific men, in their eagerness for fame, are not always just to one another; but Professor Forbes has discharged his task with the impartiality that becomes a historian. It would certainly not have detracted from the merits of the dissertation, if, in recording the progress of science, mere probabilities had been left to the oblivion that awaits them, or allowed to ripen in due time, into authenticated laws. But the learned author has not always done this. The last six lines of the dissertation form an instance in point.

It has been well shown by Dr Whewell, in his "History of the Inductive Sciences," that the history of a great discovery may be separated into three important stages. In the first, a number of inquirers lay the foundations on which original genius builds its discoveries in the second: The former of these periods Dr Whewell calls the prelude to an epoch; the latter, the epoch itself. Galileo, Kepler, Picard, and others, laid the corner-stones on which Newton built the theory of universal gravitation. Had the former not laboured, the latter could not have built; the want of Picard's measurement of an arc of meridian alone having kept back the publication of the theory for eighteen years, and led its illustrious author to fear that he had missed the truth. If that measurement had not been made, Newton might have been known only as the writer of a treatise on optics, and another on fluxions. But every epoch is succeeded by an important era, which Dr Whewell has called the sequel to the epoch. In the prelude, the seeds of truth are sown; in the epoch, they spring up to maturity; and in the sequel the fruits of harvest are gathered in. In the first, the labourers are few in number, but usually distinguished by originality and success; in the second, one or two men, whose history forms the turning point of a science from infancy to manhood, monopolise discovery and fame; but in the third, the ore-bearing strata having been reached, and shafts sunk to them from many points at once, the number of labourers vastly increases, though their success is inversely as their number. It is evident that this mode of treatment, though plausible in theory, must limit the views taken by the historian of the relations in which discoverers stand to one another. It may have the effect of unduly exalting some at the expense of others. It may hold true in the mechanical sciences, but it affords too narrow a basis to work on in others. Professor Forbes has followed a different plan. "The end at which," he says, "I have aimed, is to select the more striking landmarks of progress in each subject in each age, and endeavour to connect them with the character and position of all the more eminent discoverers, thus conveying to the general reader sufficient information on the limited number of particular subjects discussed, and interesting him not only in the science, but in the individuals. Then, by a few slighter touches only, and the mention of some secondary names, to connect with one another these brighter periods of eminent progress, in which every country and every age feels a just pride." At the same time, "he introduces the reader to the intellectual acquaintance of the eminent men who are selected for notice," an addition to the proper subject of the dissertation which relieves the tedium of merely technical details.

The three quarters of a century reviewed in this dissertation, contain all the periods into which Dr Whewell has analysed discovery. From 1775 to 1800, the foundations of future discoveries were laid, several important laws were brought to light, and especially the harvest which Newton had sown in astronomy still continued to be reaped. But from 1800 to 1825, all the branches of science, except physical astronomy, made such strides, "as no preceding time had witnessed." From 1825 to the present day, the number of labourers has been greater, but their success has been less than in the former epoch.

During the period reviewed in this Dissertation, Britain made greater progress in the application of science to art than in all the previous ages of her history put together. But there is something still more remarkable about this rapid development of engineering ability and practical skill. Before the middle of last century, the great public works of Britain, such as the draining of marshes and the building of bridges were often undertaken by foreigners. The country, unable to supply the talent requisite for these labours, looked to other nations for the minds that devised relief from difficulties, and for the machines necessary to carry their ideas into effect. A great change has taken place in these respects during the past century: a change which has exercised a lasting influence on the military, commercial, and political relations, not of this empire only, but of the whole world. The steam-engine of Watt, steam navigation on rivers and seas, canals, railways, and the engineering triumphs to which they led, are all embraced in this period; the men who imagined them, who overcame the difficulties that lay in the way, or manufactured the machines indispensable to success, were all Britons. Professor Forbes has judiciously inserted the records of these fruits of science in his Dissertation. They give a distinct view of the intensely practical character of the past century, besides forming a more than usually readable chapter in the history of scientific triumphs.

V.—1. *The Gospel according to St John, after the Authorised Version.* Newly compared with the Original Greek, and revised. By Five Clergymen. London: John W. Parker and Son. 1857.

2. *The Epistle of St Paul to the Romans, after the Authorised Version.* Newly compared with the Original Greek, and revised. By Five Clergymen. London: John W. Parker and Son. 1858.

3. *The Second Epistle of Peter, the Epistles of John and Jude, and the Revelation.* Translated from the Greek, on the basis of the Common English Version, with Notes. London: Trübner and Co. 1856.

4. *The Epistles of Paul to the Thessalonians.* Translated from the Greek, on the basis of the Common English Version, with Notes. By the Translator of 2d Peter—Revelation. London: Trübner and Co. 1858.

THE question of Bible revision cannot be evaded or set aside. It has been taken up in so many quarters, and is being so seriously dealt with by men of mark, that the higher minds of English-speaking Christendom must entertain the subject in one aspect or another. Although the discussion is of comparatively recent origin, the literature to which it has given rise is already considerable. Pamphlets, tiny or large, articles in reviews, and bulky volumes, attest the interest with which the subject is regarded. That interest is not subsiding. But is it desirable that the proposal to obtain, if possible, a new and improved version of the English Scriptures should be hushed or overborne? Our views and wishes in the matter will appear from the tenor of the remarks which follow.

The four works, the titles of which are given above, owe their origin to the movement for an amended translation of the Scriptures. The first and second are set forth as "giving a fair specimen of the nature and amount of change which might be expected to be made, if the whole of the New Testament were to be revised on the same principles" as those on which this revision has been conducted. The third and fourth are contributions towards a new translation, which is being executed under the superintendence of the American Bible Union.

And first, as to the productions of the "Five Clergymen." Their statement as to the motives by which they were actuated, and the object which they had in view, may be given in their own words. After referring to the diversity of feeling which exists on the subject of a new version, and the exaggeration on both sides, they go on to remark:—"Refraining altogether from any expression of opinion respecting the desirableness of an authorised revision of the existing version, we have thought that the best method of allaying agitation, and enabling those who cannot examine the question for themselves to form a correct view of the real state of the case, would be to offer as faithful and complete a version of a portion of the New Testament as it was in our power to construct. In so doing, however, we have kept two objects distinctly in our view—the one, to exhibit in the fullest, most honest, and most loyal manner, the actual meaning of the Inspired Word of God, allowing no subjective preferences or preconceived views to interfere with the simple and faithful exposition in English of the original text of Holy Scripture,—the other, to show, as far as is compatible with this first and chiefest object, that the authorised version is indeed a precious and holy possession, and that the errors of it are very slight and few in comparison of its many and great excellences." Everywhere are evidences of fine scholarly taste, nice discrimination, and an honest endeavour to reach a true and faithful rendering of the original. We have been struck with the improvement effected by the proper use of the article, and the more correct and expressive rendering of particles.

So far as these two books are concerned, the proposed changes of translation involving an alteration of the sense are comparatively few, and in no case do they affect the fundamental truth of the Word. Those in the Gospel of John are mostly to be acquiesced in. The more notable improvements may be specified. John v. 44, "How can ye believe, while ye receive glory one of another, and seek not the glory which is from the only God?" (*παρὰ τοῦ μόνου Θεοῦ*). John viii. 44, "He was a murderer from the beginning, and standeth not in the truth (*καὶ ἐν τῇ ἀληθείᾳ οὐχ ἕστηκεν*), because there is no truth in him." This is both a more accurate translation, and agrees better with the statement in the remainder of the verse.

In their revision of the Epistle to the Romans, the "Five Clergymen" suggest some renderings which are decided improvements, whether they involve an alteration of meaning or not. Such are those of *χωρὶς ἔργων νόμου* in iii. 28 and iv. 6; *μακαρισμὸς* in iv. 9; *ἁγιασμὸς* in vi. 22; and *δικαίωμα* in viii. 4. In viii. 13, too, *μέλλετε ἀποθνήσκειν* is rendered, "Ye must die," which rightly indicates the impending doom of the carnally minded. Yet, here are some translations uncalled for and unjustifiable. *Θεοστυγεῖς* may be found in a passive sense in Euripides, and it is true that the divine hatred of men in any case implies hatefulness in them, but it is more consistent with the contextual epithets to regard it as denoting "haters of God." In iv. 17, *κατέναντι οὗ ἐπίστευσε Θεοῦ* is rendered, "before God, in whose sight he believed;" and in a note the revisers say, "We believe the grammatical construction to be *κατέναντι τοῦ Θεοῦ, κατέναντι οὗ*. But they produce no vindication of their opinion; and in the absence of this, we shall adhere to the authorised version, and continue to regard the expression in question as a case of grammatical attraction, confirmed by Matt. vi. 16, and Acts xxi. 16.

We turn to the other works on our list, and these we contemplate with less satisfaction. They are the production of a single author. Thus, while they contain a portentous display of learning, they illustrate the impropriety of sending forth unchecked the fruit of solitary labour in this department of study, and, by contrast with the works already noticed, the advantage of co-operation and counsel. We say nothing of the principles on which the translator has proceeded; but his attitude towards the received version may be judged of from the following observation :—" Of the manifold excellencies, intrinsic and comparative, of that version, he trusts that he has now a more intelligent appreciation than before he undertook his present task, though, at the same time, he will be allowed to add, that, *so far as a judgment might be formed from the portion here reviewed*, he could much less readily now acquiesce in the opinion, that any other than a very moderate share of the world's gratitude is due to King James and his fifty-four translators."

Take a few specimens of this writer's *quasi* emendation. Here is an example of stiffness :—Our time-honoured version has, in 1 John i. 5, " in Him is no darkness at all," which this translator would render, " darkness in Him there is none." Contrast the following, the first being our version, the other the "improved" rendering. —" Whosoever abideth in Him sinneth not: whosoever sinneth hath not seen Him, neither known Him."—" Every one that abideth in Him sinneth not; every one that sinneth hath not seen Him, neither known Him." The *ἀνθρωποκτόνος* of 1 John iii. 15, he would render " man-killer," while the " five clergymen " have no difficulty about retaining " murderer " in John viii. 44. In 1 John ii. 28 the authorised version has, " and not be ashamed before Him at His coming," the Greek of which is, *καὶ μὴ αἰσχυνθῶμεν ἀπ' αὐτοῦ ἐν τῇ παρουσίᾳ αὐτοῦ.* The American translator is not satisfied, and would read, " and not be shamed away from Him at His coming." But which of those renderings best expresses the truth to the popular mind? Then, is it not absurd refining to translate *καθήμενοι*, in Rev. xi. 16, by " who sit ?" John is giving the narrative of what he saw, and the participle must be regarded as having the sense of the imperfect. Is it not hypercritical to render *μέλλομεν θλίβεσθαι*, in 1 Thess. iii. 4, " we are to be afflicted ? "

We note the above as abortive attempts to set aside the existing translation in the case of the passages referred to, and as betraying something like unworthy hostility to that translation. There are many other cases in which the judgment of the critic seems at fault.

Hitherto we have spoken disparagingly of this elaborate performance; but both quartos contain suggestions, which, although not new, are really valuable, and may be profitably pondered. There are a few improved renderings in 1 Thess. to which we may direct attention. In ii. 3, *ἐκ πλάνης* is translated " of delusion," which is confirmed by 2 Thess. ii. 11. Paul may be regarded as saying, " we are not ourselves deceived." The *μοχθος* of ii. 9 is rendered " weariness," and perhaps this conveys as well as possible the exhaustion of the Apostle, partly produced by his physical labours. Again, in ii. 13, it is certainly desirable to mark the distinction between *παραλαμβάνω* and *δέχομαι.* Might not the latter (as Calvin suggested) be rendered " embraced ? " " Accepted " is an improvement. Further, this writer is correct in his understanding of the connection of *διὰ τοὺ 'Ιησοῦ* in iv. 14—" Those who fell asleep will God through Jesus bring with Him."

For the satisfactory execution of the task which these writers, working either singly or in concert, have assigned to themselves, in order to the realisation of that on which so many hearts are set, a nearly perfect English Bible, certain high qualifications are required. There must be competent scholarship, including under this term not mere learning, familiar acquaintance with the criticism of all ages and countries, but a minute knowledge of the language under consideration, an insight into the affinities of language, and such a breadth of view and mental sympathy as enable the critic to comprehend the state of the Church and the world when the several portions of Scripture originally appeared, and to enter into the views and feelings of the several writers. Those, moreover, who would reach the full meaning of the Word, must be one in heart with Him who inspired it. And with all this, there must be freedom from bias, an honest desire to find in Scripture all that the Lord has put there, and a thorough willingness to have pre-conceived opinions set aside. Do men with such qualifications exist? We trust there are some such; but at this stage we deprecate any proposal to commit the work of revision to a body of biblical scholars, however eminent for piety, and attainments, and candour. The time has not come when that would be safe.

VI.—*Memorials of the Rev. John Love, D.D., consisting of Diary, Reminiscences and Original Papers.* 2 vols. 8vo. Glasgow.

It is upwards of a century since the subject of these memorials was born, and somewhat more than a quarter of a century since he finished his earthly career. But his memory still lives, and is cherished with profound respect and veneration by a large circle of serious and thoughtful Christians in Scotland. He was undoubtedly a man—as these memorials alone show—of an intensely earnest and elevated cast of mind; delighting to frequent not the courts merely, but the inmost sanctuary, of the spiritual and divine; capable also of tracing, in a distinct and graphic manner, the lines of his own consciousness respecting them, and of conveying deep and lasting impressions of what he experienced, to kindred spirits around him. We must not, therefore, wonder, that a desire should have been felt to obtain some record of his more private meditations and feelings; and it is with the view of meeting this natural desire, and at the same time diffusing clear and impressive exhibitions of divine truth, that the present memorials have been published.

It is now, for the first time, that the friends and admirers of Dr Love have had the means of becoming properly acquainted with the earlier stages of his course, and with the discipline through which his mind passed in acquiring its ultimate views of truth and duty. In this respect his mental history appears to have been somewhat singular; for, while in mature life, his style of thought was chiefly remarkable for its depth and gravity, in youth he was distinguished mainly for quickness and precocity of parts; and he even for a time espoused the shallower forms of Christianity, as most accordant with his intellectual habitudes and tastes. From this, however, he recovered before he reached the close of his academical course; and while still little, if at all, above twenty years of age, we find him writing on the great themes of the Gospel, with the penetration and discernment of a man of grey hairs.

Judging from these memorials, the theological views and sentiments of Dr Love approached more nearly to those of Dr Jonathan Edwards, than any other writer; and his tone of thought and feeling was evidently a good deal influenced by both Edwards and Brainerd. Yet there was an independence of mind about him, which prevented him from slavishly treading in the footsteps of any earthly master; and as well in matters of speculative as of practical religion, he shows the freedom and vigour of a true spiritual thinker. Thus, on the oft-debated subject of moral necessity and its relation to the divine predestination, instead of making the one, like Edwards, the kind of correlate of the other, he expresses his belief in the perfect compatibility of any view of the natural actings of the will with facts of the Divine foresight and sovereignty.

"In order to maintain the doctrine of the Divine authority over the determinations of the human will, it is not necessary to deny that it has a self-determining power; because such a power it might have, and yet this power exert itself as the Lord pleases. Nor is it needful to suppose a necessity arising from motives; because this would imply that God has no other way of determining the will but by motives; which would be to say, that God has no power at all in the case—only the motives have. This Divine power exerts itself in a secret manner, yet so as, that it leaves room both for a feeling of liberty and for the reality of such a liberty, as shall justify his sentence of approbation or condemnation."—(Vol. ii., p. 56.)

Profound and discriminating remarks of this metaphysico-theological description are scattered through both these volumes, which render them not without value to those who have a relish for the philosophical aspects of religion; although doubtless, statements occasionally occur, which will not stand a rigid examination. By much the greater part of the volumes, however, consists of matter strictly experimental and religious; detailing from diaries kept by the writer, and private papers, the exercises of mind, through which he passed in attaining to clear conceptions of Divine truth; his views and self-examinations, with reference to the ministry of the Gospel, and reflections on a great variety of topics, as well doctrinal as practical. The papers have been very carefully edited, and are accompanied by such explanatory statements as are required to make them perfectly intelligible. Perhaps a few of the passages, which treat a second time of the same topics, might have been advantageously omitted; but these are comparatively few; and the volumes, as a whole, certainly form a striking exhibition of the Calvinistic and deep-toned piety of Scottish evangelism as it was, at least, sometimes to be found, toward the close of the last century.

VII.—*Christian Errors Infidel Arguments.* Edinburgh, Andrew Elliot.

THE name of this book sufficiently explains its origin and purpose. The author's attention has been forcibly arrested by the fact, that scarcely any two writers who engage in the exposition or defence of Christianity, fail to contradict each other in some more or less important particular. With regard to the expositors of Christian doctrine this has long been obvious enough, and has come to be looked on as a matter of course. It is true, that almost all professing Christians, will admit the existence of a real Christianity beyond the precincts of their peculiar denomination,—will say that the various churches differ only in the smaller matters and are agreed in the greater matters of belief. But it is as true that, after saying this, each will combat with all the power that is in him, for his distinctive dogma, and will represent it as of fundamental consequence. All this is matter of every-day remark. And the author of the work above-named is singular, not in noticing it, but in pointing out one of its most calamitous effects. Is it so that, where two opinions contradictory of each other are advanced, while both may be wrong, only one can be right? And is it so, that contradictory opinions are advanc[illegible] Christians, with regard to almost every point on which Christianity is conceived to have any announcement? Then, it follows, that, *under the name of Christianity, there is current in the world as much error as truth.* And, in these circumstances, what is Christianity? 'What is truth? Such will be the question arising in thoughtful minds. So naturally do Christian errors tend to the production of scepticism.

It is not only, however, when we are asking, what are the specific teachings of Christianity, that such difference of opinion comes into view. When, putting aside that question for the time, we content ourselves with affirming the divineness of Christianity, or of that Record which makes revelation of it, and seek to give proof of what we affirm, contrarieties of view, quite as decided, make themselves evident. Each possible line of argument has its advocates and its detractors—those who affirm its validity, yea, who would risk the whole question upon it, and those who proclaim it naught. Thus, in the department of the evidences for natural religion, the "*à priori*," and the "*à posteriori*" arguments—the arguments from design in nature—that from the moral nature of man, etc., are pitted against each other. And among the evidences for revealed religion—those based respectively on the miracles, on the adaptation of the Christian scheme to the wants of man, on the harmony between the moral teachings of the Bible and the moral standard which exists within the human breast—have all in their turn been eulogised or condemned by some of the ablest Christian apologists. Hence, the powerful protest contained in the work, "Christian Errors Infidel Arguments." The apologetics which come specially under the criticism of the author are—"Christian Theism," by R. A. Thomson, Esq.; "Theism," by Principal Tulloch; "Infidelity," by Pearson; "The Eclipse of Faith," and "A Defence of do.;" "The Restoration of

Belief;" and "Bases of Belief," by Edward Miall, Esq., M.P. He has little difficulty in showing that these apologists contradict each other in much, and that in not a little some of them contradict themselves. The discussion is conducted in the dialogue form; the interlocutors being "Origen," a representative of the ordinary run of Christian disputants; "Celsus," an accomplished and acute unbeliver; and "Theologus," one who has pierced through words and current phrases to the realities too often concealed by them, and who is able to speak with some authority on the things of God.

The subjects discussed are—"Truth and Error," "Knowledge and Belief, "Belief and Responsibility," "Mystery and Contradiction," "Practical and Scientific Knowledges," "Certainty and Probability," and "The Standard of Morality"

In the first of the dialogues, Truth, as the knowledge of that which is, having being distinguished from error, and from ignorance, or the mere absence of knowledge; the competency of reason to discover truth on all matters that come within the range of the human faculties, is affirmed. In the words of the author, "If a man fairly and earnestly seeks to know the truth on any topic whatever, he will either know that truth, or know that he does not know it." In the second dialogue, it is argued, that belief always rests upon knowledge; so that what a man knows, and that only, he believes. If so, faith and reason cannot possibly come into conflict. In the third, it is shown, that man is responsible not merely for his religious beliefs, but for all his beliefs. In the fourth, the distinction between a contradiction and a mystery is most ably stated. A contradiction emerges, when one proposition comes into direct collision with another, so that, if either be true, the other must be false. A mystery is not a thing absolutely unknown; for, it may be stated in a proposition. But there is mystery, when this proposition stands related to some other proposition in a way which cannot be apprehended; as also, when the thing affirmed in any proposition is known to exist, but the "how" or "why" of its existence is unknown. In Christianity, as in every system of truth, *there may be mysteries—there cannot be contradictions.* In the fifth dialogue, practical and scientific knowledges are distinguished from each other; the former is, "knowledge of an object in its relations to our own interests;" the latter is, "knowledge of an object in its relation to other objects generally."

Such are some of the contents of this book. The argument is throughout conducted in a most able manner—power of grasp and fineness of touch being singularly combined. There is no obscurity of statement—no eluding a difficulty—no timidity in stating deliberately accepted results. With regard to one or two points, we incline, indeed, to differ from the author. Thus, we think that his remarks on knowledge and belief tend to affirm not merely the uniform connection of, but the identity of, these mental acts; or, at all events, that he fails to discriminate between them in such a way as the common consent of men, expressed in all languages, demands.

We conclude by thanking the author for his work, and by commending it to all reflective men.

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MURRAY AND GIBB, PRINTERS, EDIN